INFORMATION BUREAUX AND SPECIAL LIBRARIES.

REPORT OF PROCEEDINGS OF THE FIRST CONFERENCE,

held at

High Leigh, Hoddesdon, Hertfordshire,

September 5th—8th, 1924,

To consider, promote and organise the systematic utilization of informational and library services.

LONDON:
PUBLISHED BY THE STANDING COMMITTEE
APPOINTED BY THE CONFERENCE.
1925.

ANNOUNCEMENT OF 1925 CONFERENCE.

The SECOND CONFERENCE on Special Libraries and Information Bureaux will be held at BALLIOL COLLEGE, OXFORD, during the week-end September 25th—28th, 1925.

The considerable attractions of Oxford as a Conference centre, and the growth of interest in special library work, render early registration on the part of intending delegates particularly desirable.

All enquiries and communications should be addressed to:—

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Organising Secretary,
ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX,
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MEMBERS OF STANDING COMMITTEE OF THE FIRST CONFERENCE ON SPECIAL LIBRARIES AND BUREAUX OF INFORMATION.

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Mr. Percy Cohen	Unionist Central Office, Westminster.
Mr. W. H. Dawson	Universities Bureau of the British Empire, London.
Mr. H. Vincent Garrett	Chief Librarian, Rowntree & Co. Ltd., York.
*Mr. Leon Gaster	Hon. Sec., Circle of Trade and Technical Journalists; Hon. Sec., British Section, International Press.
Sir Richard Gregory	Editor of "Nature", and Chairman, Circle of Trade and Technical Journalists.
†Mr. E. Wyndham Hulme	*Late* Librarian, H.M. Patent Office.
*Dr. R. S. Hutton	Director, British Non-Ferrous Metals Research Association, Birmingham.
Col. E. L. Johnson	Director, Cleveland Technical Institution, Middlesbrough.
Miss A. L. Lawrence	British Medical Association, London.
†Miss L. Stubbs	Research Dept., Metropolitan-Vickers Electrical Co., Ltd., Manchester.
Mr. G. B. Willey	*vice* Sir Robert A. Hadfield, Bart.
*Dr. J. C. Withers	British Cotton Industry Research Association, Manchester.
*Mr. Sinclair Wood *(Hon. Treasurer)*	Lever Bros. Ltd., Publicity Club of London, and Business Research Association of Great Britain.
*Mr. Arthur F. Ridley *(Hon. Secretary)*	Librarian, British Non-Ferrous Metals Research Association, Birmingham.

The above were elected by the Conference at the session held on September 6th, 1924. The following were co-opted members of the Committee at its subsequent meetings.

Mr. L. Honeyburn	Nobel Industries Ltd., London.
Mr. S. J. Nightingale	Research Dept., Metropolitan-Vickers Electrical Co., Ltd., Manchester.
Maj. W. E. Simnett	Transport (1910) Ltd., Westminster.

* Member of Executive Committee.
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FOREWORD.

The growth of knowledge during living memory has been remarkable and its application evident in every direction. Whilst it is generally recognised that "knowledge is power", it is none the less true that a considerable proportion of accumulated knowledge, whether in the domain of science, business, sociology, education or elsewhere, is unfortunately lying dormant and untapped.

That this state of affairs prevails is much to be regretted. An immense amount of extremely valuable information is in existence, if only one knows where to find it. The volume of modern knowledge being far beyond the mental grasp of any individual or group of persons however erudite, it becomes a vital necessity to provide a master key whereby the common storehouse may be unlocked.

It is, therefore, with pleasure that I learn of the beginnings of a movement having as its object the co-ordination and systematic use of the many informational and library services.

P. CUNLIFFE-LISTER.

Board of Trade.
May 21st, 1925.

PREFACE.

This volume is the record of proceedings of the First Conference on Specialised Libraries and Information Bureaux, held at High Leigh, Hoddesdon, in September, 1924. The Conference was called initially in order that those engaged in the collection, treatment and dissemination of information in many departments of human activity should have an opportunity of discussing certain common problems.

It was desired that, on account of the very wide range and comprehensive nature of the programme, the atmosphere of the meetings should as far as possible provide a basis for informal and untrammelled exploration of the many ramifications of the main theme. For this reason preparations for reporting the sessions were made on a very unambitious scale, and apologies are due to all whose contributions may have been curtailed, or have escaped publication. It is believed, however, that the available material will form a useful contribution to the scarce literature on Specialised Libraries, and that for this reason publication of the report in its present form is justified.

The Conference proved so successful that it was decided to ensure the continued co-operation of interests represented, and to this end a representative Standing Committee was appointed.

This Committee was fortunate at an early stage in securing the assistance of the Carnegie United Kingdom Trustees, who, with typical foresight, recognised the importance of co-ordinating existing information services and of providing facilities whereby enquirers might be directed to appropriate sources.

The financial support thus generously provided will suffice to enable the Association to proceed for about two years, during which it is hoped to explore the field of existing specialised libraries and information bureaux and prepare a comprehensive Directory.

It is further proposed to hold a second Conference towards the end of September, 1925, full particulars of which will be published in due course. Subsequently it is hoped to consider ways and means whereby the new body may be placed on a permanent and self-supporting basis, so that it may continue its work of co-ordinating information services and providing assistance to those who control and use them.

The new body will be known as "The Association of Special Libraries and Information Bureaux," and as mainly representing users of the great national and other collections it will co-operate fully with the Library Association, the Carnegie United Kingdom Trustees, Government departments, the technical and daily press, and with other bodies concerned with this important work.

Enquiries from those interested will be welcomed at the permanent offices of the Association, at the address given below.

On behalf of the Standing Committee,

J. G. PEARCE,
Chairman.

38, Bloomsbury Square,
London, W.C.1.

FIRST SESSION.

Chairman:
DR. R. S. HUTTON.

THE COLLECTION, CLASSIFICATION, AND DISTRIBUTION OF RECORDS IN THE WORK OF INFORMATION BUREAUX AND SPECIAL LIBRARIES.

Introductory Address by DR. R. S. HUTTON.
Director, British Non-Ferrous Metals Research Association.

It has been suggested that our somewhat heavily loaded programme of the next two days might be made of more practical value to those attending this Conference if some explanations and exch nge of views preceded our General Sessions.

There is still time to alter or adjust the programme so as to allocate to one or other of the Sessions the consideration of any other aspect of the subject.

The conception of this Conference is, I believe, due to my friend, Mr. J. G. Pearce, and the somewhat onerous task of arranging the details has been taken up as a spare time occupation by my colleague, Mr. A. F. Ridley.

I must also express appreciation for the interest and generous financial support given by Sir Robert Hadfield, Bart., F.R.S., which has been most encouraging to us in embarking on this venture.

Many of us who are interested in the Research Association movement look upon the matters which come within the province of this Conference as of vital importance to their work, and the difficulties in planning and executing a system of collection and distribution of information are so great as to make one yearn for an exchange of views with those who have similar problems to tackle.

The only criticism of the proposal to hold such a Conference that I have heard, was a suggestion that it would have been better to link it up with one of the Library Association meetings. Whilst having a great respect for the professional librarian, my own view is that, for the moment, we need to discuss these questions in an entirely independent meeting, so as to mobilise the interest of a wide field of library users.

Our subject has been divided into three headings: the Collection, the Classification, and the Distribution of Records, of which the last appears to occupy the greatest space on the programme, and to offer inherently the greatest difficulties.

The *Collection* of records is a primary function of all librarians, and it would, perhaps, be indiscreet for me, as a layman, to say much about it. The urgent needs of research, however, are calling more and more for " periodical " literature, which, on account of expense and other reasons, is seldom adequately available. (W. Warner Bishop, *The Record of Science*, August 25th, 1922; vol. 56, pp. 205-216.)

The World List of Scientific Periodicals will, I suppose, for the first time place on record the vast extent of this literature, ranging, probably, up to nearly 30,000 separate periodicals.

Co-operation and organised systematic sharing of responsibility can alone provide us in this country with a proper working supply in the different large centres of population.

The Americans, with their superior financial endowments, although they started so much later in the field, are probably already well ahead of us. In 1921, the Special Libraries Association recorded the existence of 1,300 Special Libraries, and stated that 600 separate industrial undertakings were running their own libraries, in most cases in charge of a professionally trained librarian.

The table below gives some few data, taken almost at random, of the supply of periodical literature in that country, and it would be interesting to place alongside it examples from our own country.

NUMBER OF PERIODICALS TAKEN BY SOME TYPICAL AMERICAN LIBRARIES :—

Library of Congress, Washington, D. C.	approx. 8,000
U.S. Dept. of War : Air Service ;,	208
U.S. Dept. of Agriculture ,,	2,700
U.S. Dept. of Education ,,	500
U.S. Dept. of Commerce ,,	1,182
U.S. Surgeon General's Office	1,895
Several larger American Universities	each approx. 4,000
University of Michigan, Ann Arbor, Mich.	2,200
Great Western Sugar Company, Denver, Col.	160
Eastman Kodak Company, Rochester, N. Y.	200
Cleveland Tractor Company, Cleveland, Ohio	350
Edison Electric Appliance Co., Chicago, Ill.	150
Du Pont de Nemours & Co., Wilmington, Delaware	95
Parke, Davis & Co., Detroit, Mich.	300
Western Electric Co., Engineering Dept.	225
Silk Association of America, New York	200

The *Classification* of records is, again, the task of the professional librarian, and one too little appreciated by the layman. We are to have an opportunity of discussing the training of librarians, and it is to be hoped that, on this occasion, we may hear something of the possible future requirements and special training for posts in scientific and industrial special libraries. The classification of literature is a relatively simple matter, when it is merely a question of printed books and pamphlets ; but nowadays, vast stores of information are coming rapidly into view and fading away in our periodical literature. Even brief notes which may possess enormous potential technical value, appear in out of the way columns of different papers and magazines. How are we to classify and deal with such matter ? The Conference is fortunate in having Mr. E. Wyndham Hulme to speak to us on " The Subject Index to Periodicals," and Mr. Stanley Jast and others can, no doubt, tell us with what success they have tackled commercial library service.

The *Distribution* of records, as I mentioned, looms very large on our programme, and it seems to me that the question could be looked at from two points of view. Firstly, as has been done

already from inside, by the inventive skill of the professional librarian in putting forward his possessions in a manner to attract the interest of the user.

Heaven forbid the formation of a new society, if the objects can otherwise be accomplished : but much still remains to be done to awaken a more active utilisation and development of our resources, and a " Library Users' Association " might play an important part in this connection.

Many of our problems are concerned with such questions as How to use the Library ? How to develop a healthy curiosity and desire for information ?

Some American Universities have already provided special courses for science students on the use of science literature*, but so far as I know, there is no parallel in this country, and most of our students are, I fear, lamentably lacking in any desire or training for bibliographical searches. Our own Research Association recently offered a modest prize for Annotated Bibliographies on a few suggested metallurgical subjects, with a view to encouraging such an interest, but we did not have a single applicant for the prize! It would be easy to quote astounding examples of the lack of knowledge amongst business and industrial undertakings of published information on processes and products of great importance to them. From the national point of view, the development of a wider spirit of curiosity amongst all sections of industry, as to what their competitors are doing abroad is greatly to be desired. Such a spirit of curiosity forms the foundation of progress, and its awakening would at once react not only upon library and information bureaux development, but upon the whole welfare of the country.

Finally, I trust that in our deliberations we shall keep clearly in view the possibility of arriving at some practical proposals, as a result of this Conference, which may lead to the development of our aims and objects. Is it desirable or possible to have further Conferences ? How can we assure a continuity of that helpful exchange of views and of experience which such a gathering as this seems to provide ?

---

*" Chemical Literature and its Uses." Marion E. Sparks. Urbana, Illinois. $1.00.

" Instruction of Students in the use of Technical Literature." E. H. McClelland, *Engineering Education*, May, 1923, pp. 407-420.

THE PRESENT POSITION AND FUTURE DEVELOPMENT OF THE INTELLIGENCE SERVICE.

By J. G. Pearce, B.Sc. (Eng.), Director, British Cast Iron Research Association.

The most characteristic and significant feature of the last few years has been the enormous growth in "fact information" relating to all departments of human activity. In science and technology the accumulation of organised fact knowledge has been enormous, and in other directions considerable work has been done in the recording of experience and the collection of statistics of many kinds. In parallel with this growth, a steadily-increasing tendency has been observed to utilise existing information to the full before making decisions, or commencing new activities or undertakings in industry, commerce, and in other fields, rather than to rely on a complex of experience and knowledge unilluminated by the actual facts. These tendencies were emerging definitely before the War, but the sudden adaptation to new conditions then demanded rendered doubly necessary some means whereby relevant information could be collected, properly recorded and distributed to those whose function it was to make use of it.

During the War, too, ignorance among scientific men of certain developments which had taken place in other countries resulted in very considerable handicaps. Post-war conditions have strengthened rather than diminished the necessity for this systematic treatment of information. The ever-increasing output of published matter renders it enormously difficult even for specialists to follow discoveries and developments in their particular fields. The pressure of competition in industry and commerce has directed the attention of business men towards the systematic examination of trade tendencies and the collection of statistics illustrating the ebb and flow of trade, and this has involved the collection of data in fields where it had hitherto been scarcely considered necessary.

INTELLIGENCE BUREAUX.

It is, therefore, not surprising to find that agencies have grown up, variously known as "special libraries," "information bureaux," "intelligence services," "service departments," in various organisations requiring to make use of published and other information, such as banks, insurance offices, manufacturing and commercial houses, newspapers, Government departments, and in political, social, educational, scientific and technical institutions of all kinds. These agencies vary considerably in character, scope, and size, but they have in common functions relating to the collection, frequently from world-wide sources, of information relevant to the work of the particular institution to which they are adapted, its recording in suitable ways and its distribution to the staff officers concerned.

Unquestionably, these agencies have an economic value.

The ordinary technical officer in industry or elsewhere is frequently a highly-paid specialist, and it is an obvious economy to integrate the informational needs of an organisation, and have a small expert staff to keep in touch with the various channels through which information is received, and to know to whom it should be distributed. Loss of time occasioned through every member of an organisation seeking his or her own facts is, in the aggregate, enormous, not only on account of the time waste involved, but because the average person only dimly appreciates the technique of information searching and information recording. The special library or intelligence bureau thus extends and supplements, but does not replace the municipal or national library. The person in charge of it is seldom exclusively a librarian, either by training or temperament, but exercises in a lesser degree the functions of a librarian, along with other very important functions, concerning a small highly-specialised collection of documents. He is an information-user as much as a librarian, and consequently such agencies must be regarded as extensions of the library rather than as libraries in themselves. In point of fact, some of these agencies have no collection of books at all, and invariably the book collection is subsidiary to the collection of periodicals and confidential documents. Those attached to some such agencies pride themselves on keeping no files or records at all. Their information is derived from personal contacts which change from day to day.

It is therefore clear that the special library or intelligence service is a channel through which information may be collected and distributed rather than a source of information in itself, and it must make systematic and organised use of all existing informational services. It is complementary to the public library, which aims at the provision of material, whereas the special library aims primarily at circulation for a particular purpose. It does not cater for the casual or amateur reader, but for the specialist, and it forms in vital sections of the activities of the community an important link between the public and other great libraries at the one extreme and the actual prospective reader at the other.

THE HODDESDON CONFERENCE.

Varied as is the scope of such intelligence services, it is obvious that they have much in common, such, for instance, as the methods of purchasing and collecting of fact information and its treatment, methods of staffing and staff training. There is considerable scope for mutual co-operation, and for this reason the present conference was projected in order that those interested in this field of work could meet and discuss common problems.

Previous efforts in this direction have been rather tentative. In 1918, the Faraday Society held a general discussion on the "Co-ordination of Scientific Publication," and in 1919 a Conference of Research Associations discussed the matter at the Department of Scientific and Industrial Research, for Government-aided Research Associations found it necessary in almost every

case to establish an information bureau, and this has always been a matter of primary importance to them. In 1922, the Annual Conference of the Library Association had a special section on " Industrial Libraries."

The attendance at the present Conference already indicates the interest which is felt, and it is scarcely necessary to indicate some of the directions in which mutual discussion would be profitable.

It is probably unnecessary to say that the present Conference has been called entirely without preconceived ideas as to any course of action which the Conference might take ; particularly, it should be emphasised that there is no intention of forming a separate Association or body to promote the objects in view. It was felt that a conference of the present kind, held under such conditions as would enable members to participate freely during the week-end, could not fail to be of considerable stimulus and value.

Among the matters which might engage the attention of the Conference is the question of nomenclature. No definite name for the activity with which we are concerned has yet been adopted. The phrase " special library " is hardly adequate to cover the activities as a whole. The signification of the term "intelligence," in the military and naval sense, has become widely known since the War, but is by no means popular in the U.S.A., where the phrase " special library " is almost universal. With their admirable instinct for coining words, the French refer to " documentation " to cover the whole of this activity.

Another important matter is the relationship of special libraries with one another, and with the great national and public libraries, in order to ascertain to what extent co-operation is practicable and desirable. Futhermore, it is desirable that those members of the Conference who have special knowledge of developments abroad, particularly on the Continent and the United States, should give some idea of what these developments are. In particular, the Concilium Bibliographicum at Zurich has been doing excellent work, and the death of its founder, Dr. Field, is greatly to be deplored. At Brussels, the elaborate Institut Internationale de Bibliographie has been established for some years as a central source of all bibliographical material. In America, there is actually a Special Libraries Association. At a conference of this Association, held in 1923 in Atlantic City, the writer had the privilege of presenting a paper on " Special Library Developments in Europe," which was received with considerable interest.

Further problems concern the centralisation or decentralisation of special library activities and the extent to which information obtained from a privately-conducted service can be placed at the disposal of other people. There is the question of the relation of the special librarian to his work, which rises particularly when confidential information is to be collected which is interpreted by others for propaganda purposes in ways in which the special librarian frequently might not approve.

In these directions, and in the reading and discussion of the admirable series of papers, together with the interchange of ideas regarding the technique of collection and dissemination of material, there is ample to occupy all our energies over the week-end.

FUTURE ACTIVITIES.

Members of the Conference may find their most useful activities grouped round the three principal divisions of work, the scientific and technical, the political and social, the industrial and commercial. Considerable value would be secured through the documenting of existing agencies, such as the national and municipal libraries, the university, institutional, governmental and other semi-private collections, bureaux attached to industrial and commercial houses and bodies of all kinds, and the examination of the possibilities of mutual co-operation, as by common purchasing, reciprocal interchange of experience, of staff and of material resources. Further, the prevention of overlapping in such matters as abstracting and acquisition of periodicals might be considered, and the most economical procedure worked out in arranging translation services, copying facilities, acquisition of foreign literature, staff education and training.

CONCLUSION.

In all departments of human activity, there is a natural and inherent growth or progression. The specialisation of function in modern life has now reached a point in which many people are engaged in promoting this ordered progress. A special library or intelligence bureau may be regarded as an integral part of and a necessary instrument of this development function in industrial and social life. It has an enormous value in promoting investigation and research work on sound lines, with proper regard to what has been done in the past, gained from historical data, to be used to illuminate the future. Documentation will be an invaluable instrument in the creation of favourable public opinion, so important to establish in this country when any forward movement is planned. It has, that is to say, an important connection with the broader educative process which is always going on outside the schools. The function of those who systematically seek, record and distribute information is, in both its technical and social aspects, no less important than that of the teacher, and calls in a high degree for those qualities which are recognised as highest and best in professional life.

* * *

Mr. B. M. Headicar (Librarian, London School of Economics): I was one of the first, I think, to accept the invitation to this Conference, when it was first announced, because it seems to me that the thing has been badly wanted for a very considerable time. We want to co-operate a good deal more than we are at present doing, and I am perfectly sure that we can all be a very great help to one another. Whether we ought to form, or try to form, a Special Libraries Association is a matter, I think, which will require a very great deal of discussion. I think, myself, that the Library Association ought to be able to meet all the needs of the Special Libraries. They can be a very considerable help to us, and I feel sure that they would be sympathetic to a move of that kind.

I am rather interested in what Mr. Pearce said regarding propaganda. That, of course, is a very sore point with many people. A Conference of Experts, at Geneva, at which I was British delegate, has drawn up new proposals regarding the international exchange of official and scientific publications. Among the recommendations is one that scientific publications of any kind, whether emanating from the government, the university, a scientific institution, or even a special library, should be notified immediately on publication to the National Committee, which, it is proposed, should be set up in each country. It is difficult to know what has been published and when it has been published ; because a periodical is dated July, 1924, it does not mean to say that it was published in that month ; it means, in some cases, March, 1925. That has been a matter of very great difficulty. Fifteen per cent. of societies and institutions which issue publications in this country issue them after the date appointed. That, I think, is an important matter.

Another important question is that of having access to material in so-called special libraries. There ought to be some arrangement made, and perhaps this Conference can help in that way. By such a method, notification could be made to some head official or headquarters that certain information of a particular kind is tabulated in a certain library, which is available to the public at large. Nowadays, it is a great difficulty to find out where particular information is, and whether the public may have access to it. The Raw Materials Section Library, at the War Office, contains, I suppose, one of the finest up-to-date Textile collections in this country ; but the Government laid down a rule that no outside person, however interested he may be, is to have access to the documents there.

Mr. Stanley L. Jast (Chief Librarian, Manchester). You yourselves know that there are special libraries which do not know the extent of their field, and which do not know the personalities in that field, and I take it that this is an attempt to bring these people together, and let us know one another, what we are doing, and come to some definite conclusion, if we can. I agree with Mr. Headicar, that it is an excellent idea which has been long overdue, and I think that it would be a mistake to do what both of you have asked us not to do, at this stage. That is to endeavour to crystallise at the moment what ought to be merely fluidic. May I say, also, that I think with Mr. Pearce, that there is one practical thing that you can do, and a very important thing, and that is to decide upon a working definition of special libraries. I admire Mr. Pearce's attempts at a definition, but I disagree with his definition. It appears to me to be an academic definition, and not a practical one. The question is rather serious. A good deal of misunderstanding is created by the extraordinarily loose way in which the term " special library " is used. I do not mean among the very definitely special libraries and works libraries, and so on ; but a great deal of misunderstanding has been created among large libraries.

To my mind, a special library is a special collection of books—that is to say, a collection of books or other literary material, which is run by a special staff,—that is to say, you have the two things : special people and the special collection, and it appears to me that those are the fundamental things. I object most strongly to Mr. Pearce's attempt to limit special libraries to libraries which are merely there for the collection of facts, and I would not agree at all with him that our music library in Manchester was not a special library. It is a special library. It has a specially-trained staff, and it has special methods related to these books ; and that is a special library. At all events, I agree with Mr. Pearce that the first thing this Conference ought to do is to get a special definition of what is a special library.

Mr. E. Wyndham Hulme (Formerly Librarian, H.M. Patent Office Library). I would certainly like to support the Chairman, in his plea for the training of the student, especially of the University student. The undertaking of bibliographical work without bibliographical training is really very disastrous. The attitude of a man, if he is deficient in the knowledge of what has been done before, is always to do something off his own bat, quite ignorant of whether the scheme is a practical one or not.

If you take, for instance, that great work of the International Catalogue of Scientific Literature : there you had the finest collection in the world, in science, but the way that work was done was a scholarly way, and they laboured under very great difficulties. That catalogue is now definitely abandoned, and one of the reasons why it was abandoned was because it was practically never

used, except during the War, and then it was used because it was the only method of getting information. A catalogue which was intended to be used for special purposes had its principal entry in the author catalogue. They split up the author catalogue, which was published with great success in seventeen different sections, and now they are going to start again on a consolidated author catalogue.

Nearly 20 years ago, all the nations of the world combined to produce a work which was hardly ever used. In point of fact, not only was the work done in a way which would not commend itself to any trained librarian, but there was a great deal of work done which, I think, if the interested societies had been consulted, it would not have been necessary to do at all. The Chemical Society never used the chemical index—it had not got any chemical abstracts. A work of great importance was, I think, wasted entirely.

With regard to the attitude of the Library Association, two speakers have already alluded to it. The Library Association did contemplate, about seven or eight years ago, a special section, and that section would have come into being but for the fact that the gentleman who was most interested in it moved to Edinburgh, and was unable to devote himself to it. Otherwise, he would have been approached with a view to forming a special section. One of the difficulties was that meetings could only have been arranged perhaps once a year.

With regard to the question of nomenclature—it is a very difficult one, and I do not think I will touch it, except to suggest that " special " really means " specific " or " specialised." It is very difficult to define. I suggest that you appoint a small committee to deal with it*.

I was very interested in what Mr. Headicar said with regard to Textile information. It seems a pity that the enormous amount of private information collected during the War should not be made available.

Dr. J. C. Withers (British Cotton Industry Research Association). With regard to the question of bibliography: one of the greatest needs in this country is to create a desire for reading the records of the past.

The Manchester University is keen on this subject, for it is possible now, in Manchester University, not only to get M.Sc. by practical research, but by bibliographical research.

I would like to know, from Mr. Headicar, to the nearest thousand, the number of books and panphlets in that War Office collection.

Mr. Headicar replied that if all the material were included it would be something like 15,000 to 17,000 items.

Dr. Withers: I take it that perhaps most people here are concerned with economic information. I am concerned with purely scientific information. The War Office material deals with cost of production and labour, and so on. My little library has 6,000 books and pamphlets on Cotton, and scarcely any of them are on economics.

Mr. Finlayson (British Motor Research Association). It is a general practice, with most research associations, to make the scientific staff do the special library work. I should like to hear from people of experience whether they consider it is a good thing or not. I think that to employ scientific men on the work of browsing through literature is rather a waste of material.

Those of us who have not been trained as librarians do feel that we are not doing things in the best way, and therefore, I think that we should like to hear from the professional librarians as to how we are to do our work in the best possible way.

Mr. P. K. Turner (Editor, *Experimental Wireless*). I notice that the subject of our main Conference is divided into two parts. The special library, however admirable it may be, cannot be everywhere simultaneously. The bureau of information can supplement the work of the special library to an enormous extent, by putting scattered workers in touch with the sources of information. No special library, however good it may be, is really useful to the worker, unless it makes a point of telling him what it has got for him.

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*The Conference afterwards deputed to the Standing Committee which it appointed the task of evolving a satisfactory definition. (*Ed.*)

SECOND SESSION— *Chairman: W. BARBOUR, Esq.*

THE LIBRARY OF H.M. PATENT OFFICE.

By ALLAN GOMME (Librarian).

In the few remarks that I am going to make, I do not propose to describe at any length the working or the contents of the Patent Office Library, for this is probably known to most of you. I propose, rather, to use the library as a peg on which to hang a few very general observations which seem to me to illustrate some of the problems that may arise in connection with Special Library work, and to have a bearing on the subject set down for discussion this morning.

After the discussion we had last evening, I am not going to be so rash as to attempt a definition in so many words of the term "Special Library," though as the Chairman postponed the question till this morning, I feel inclined to say a few words about it. It seems to me that the functions of a Special Library lie between those of the Public Reference Library, on the one hand, and those of the Information Bureau on the other hand, and its organisation and general policy are largely determined by the position that it occupies between those two extremes. The Patent Office Library, for instance, where we have to deal with a wide range of subjects, though specialised in the domain of science and technology, and where our readers are not always the specialist or the scientifically trained, approaches the Public Library end of the scale, and the general problems of the two do not differ to any great extent. On the other hand, there are the highly-specialised functions of the business or factory library, in which, perhaps, the main work of the librarian begins where that of the general librarian ends. He has not only to collect and classify all the available material relevant to the particular industry with which he is concerned, and possibly even to anticipate the wants of his principals by compiling his own records, often from unprinted matter. But he or his staff may frequently have themselves to carry out the examination of the literature, and prepare a report embodying the desired information in a concise and easily-digestible form. In drawing this distinction between public and special librarians, I hope I am not being disrespectful to the former. I do not wish for a moment to isolate the individual librarian. It may be that the librarian of a public library has frequently to undertake the duties of an information bureau. He may be required, for example, to prepare a report on some municipal question that has arisen in the Town Council. It might even be his duty to foresee that such a question might arise, and be prepared for it. But in that case he is, I think, acting for the time being as the special librarian of a Municipal Government Library, and not in his capacity as public librarian. The two function in a different way, and obviously much of the routine of the one would not be at all suitable for the other.

But all special libraries, however widely separated their objects, have this in common, that they are designed for the worker specialist, with the aim, by bringing the recorded experience

of the world within his reach, either of preventing him wasting valuable time by working along lines already thoroughly explored by others, or of enabling him to push out along fresh avenues by the study of the successes and the failures of his predecessors.

The Patent Office Library comes well within this very loose definition. It was formed primarily for the use of inventors or their agents, to enable them to avoid a large expenditure of time and energy, not to say hard cash, in doing something that had already been done. Its use is not now, of course (though this is not sufficiently recognised), confined to those having business with the Patent Office, but its *raison d'être* does, to a large extent, determine its general policy in book selection and organisation. Thus we obtain not only the standard works in all branches of science and technology, but also books and periodicals that show the outward appearance or shape of things. Such works may be held to belong rather to the Art Library than to the technical one, but we want them because they are of the greatest value and interest not only to the art worker himself, but also to that portion of the staff of the Patent Office that has to deal with the registration of designs.

We also place on our shelves any books that may have a special significance in connection with Patent Office practice, or which may otherwise be of interest to the Examining Staff of the Office, or others engaged in Patent work. Thus, to take an extreme case, we have standard books on how to play lawn tennis, on the ground that a tennis racket or ball would be proper subject matter for a patent. We subscribe to a journal like *Tobacco*, in spite of the fact that it contains little of technical value, and is of comparatively little use for research purposes (being without an index), because it gives reports of cases in the Courts on the adulteration of tobacco and kindred matters, and these are questions which arise in connection with a clause in the Patents Act, giving the Controller power to refuse a patent for anything that would be contrary to law. I feel I ought to apologise for introducing such seemingly trivial matters as these; but I do so only because I wish to emphasize the fact that what may be a small matter in one library may yet be of great importance in another, and that any library, whatever its special subject, must always keep its immediate purpose in view all the time; for this may prescribe very different working details even for libraries having the same general scope.

Take another instance, the history and historical development of a subject. It is fairly evident, I think, that in a large number of special libraries it would usually be unnecessary and inexpedient (at any rate, where questions of money and space were a consideration) for the librarians to make any special feature of works of an historical nature, or to acquire early text-books or long runs of periodicals or serials. Trade and commercial libraries, for example, deal with subjects in which much of the information of to-day is out of date to-morrow, and it is obviously of paramount importance that the energies of the staff of such a library be concentrated on the collection and systematic arrangement of

current sources of information, and on keeping their records up to date by every available means, discarding, when necessary, copies of works which either have been superseded by later editions, or which, dealing with matter more or less ephemeral, would have little interest for the manufacturer concerned only with the commercial problems of to-day. On the other hand, other libraries, such as those of the learned Societies, may well attempt to make their collections as complete as possible, and the library of the Patent Office, partly no doubt because we have the excuse that published matter is never out of date, where Patent litigation is concerned, makes a special feature of copies of old scientific and technical works, and of retaining all its early editions; though, for the sake of convenience, these are removed from the public shelves. It has, indeed, a large and valuable collection of such works, and is especially rich in early sets of periodicals and the journals of Scientific Societies; a fact which, with the system of free access to the shelves, which has been the policy of the Library since its foundation, in 1855 is of no little assistance to the historical researcher, though it would, I expect, leave many of our readers very cold.

This question of the discarding of out-of-date material is one of the difficult problems that most special librarians will have to tackle. I cannot speak on the matter from my own knowledge, for, as I have hinted, we get rid of very little at the Patent Office, the only case I can recall being that of our collection of patent laws, from which we weed out all obsolete legislation. But, even in this, sticking to our principles, we shelve rather than solve the question, for the weeded-out material is transferred to another collection with its own catalogue entry. The best method of indexing and cataloguing matter which is purely of passing interest, such as newspaper clippings, is a subject on which the opinions of those who have had a working experience would be very valuable. As to what should be retained and what destroyed, this, like book selection, is one of those anxious problems that everyone must solve for himself.

In the Patent Office Library, which has a fixed income, the selection of books becomes every year an increasingly difficult question, aggravated at present, of course, by the enhanced cost of books, periodicals, and binding due to the War. We confine ourselves to the standard treatises on the various branches of science and technology, and to works that relate to subjects which are only inadequately dealt with in the scattered columns of periodicals, but with a decided liberal tendency in the direction of bibliographies, reference works, encyclopaedias, and, of course, technical and other dictionaries in all languages.

Patent literature, fortunately, is for the most part presented to us by the various patent offices of the world in exchange for our own office publications, which are distributed with a fairly free hand, and we are able to adopt a policy which would not, I suppose, be considered necessary for other technical libraries in this country. That policy is to obtain particulars of all patents granted and all trade marks and designs registered from every

country, literally from China to Peru, that has a patent system and publishes its records ; whether this be in the form of the full specification of the invention, abstracts, indexes, or bare chronological lists.

Not far short of 200,000 patents are granted every year, and certainly over 100,000 trade marks are registered, and we thus receive a very large collection of material which, if properly classified, would give us an i sight into the activities of industry throughout the world which could not well be surpassed. Luckily for us, for it would need a very large and specially trained staff to deal with a mass of literature of such a character, most of the important countries give us, in addition to full specifications, adequate name and subject indexes, which render a search a comparatively simple matter. For a few countries which are sensible enough to print the class allotment marks on their specifications, we are enabled to place on the shelves a duplicate set of specifications, arranged in class order. These classified copies are kept with a check list in manilla envelopes, and can be obtained by a reader on demand. This has been done for France, Germany, Switzerland, Austria, and Scandinavia, and greatly facilitates a search through the records of those countries.

The United States is rather an offender in this respect, for although it may have a very efficient system in its own Search Rooms, it provides very little encouragement for a search on subject matter by anyone outside Washington. The only assistance it renders is in the form of an annual alphabetical list of titles, which is rather tedious and not altogether reliable to work with, and a weekly class allotment list which, though exceedingly useful for current specifications, is very unsatisfactory for an extended search backwards. We have made an attempt in the Library to overcome this, by obtaining complete manuscript class allotment lists for each class direct from the U.S. Patent Office. The scheme has not, however, proved a success, and is not being proceeded with.

For other countries, we have in the main to content ourselves with what is provided by the issuing patent office, though we have attempted to supplement this in a small *Guide to the Search Department* which we have published, and in which references are given, where possible, to other works, books or periodicals, in which fuller or more conveniently arranged details are given.

I need not detain you with a description of the British patent material, except to mention one or two points that may be of interest. Its specifications, very full and useful indexes and abstracts, must be well known to you. But the official series of patent grants and specifications is not by any means complete. Thus, it contains no grants prior to 1617, no Commonwealth grants, and has various deficiencies even during the period it professes to cover. These gaps have, however, been filled chiefly through exhaustive research at the Record Office and elsewhere on the part of Mr. Hulme, or at his instigation, and the Library now possesses, as far as we know, a complete record of the grant

of British patents from the earliest of which we have evidence in 1449 down to the present day.

With the actual issue of the Patent Office publications, the journals, abridgments, and so on, the Library has no concern. All we can do is to arrange these to the best advantage in the Reading Room, in such a way as to give the public the fullest facilities for search. The class volumes of abridgments of printed specifications, for instance, which are issued from time to time, are of necessity in considerable arrears, and are of no use for the current period. The Library, therefore, supplements them by cutting up copies of the weekly Journal; the abridgments therein are pasted on sheets and are classified and filed in boxes adjoining the volumes of their respective classes, so that a searcher has the abridgments of all specifications allotted to any one class from 1855 up to within a few weeks of the date of his search.

The Library also maintains a current card index to the names of applicants for patents, which is posted daily as the applications are received, and a series of registers recording the progress of a specification through all its stages, from filing to the final sealing of the patent. These are posted weekly, and form practically a complete and up-to-date index to the Official Journal, a feature which is greatly enhanced in value now that an index no longer forms part of the published volume.

In the Patents Library at Manchester, Mr. Jast has, I gather from a letter in the *Library Association Record*, a vertical file system for dealing with patent material. I hope he will tell us something about that.

I might mention here, as an exceedingly useful adjunct to the library service, our photographic copying apparatus, which enables us, within a very short time, to reproduce in facsimile any required pages of books, periodicals, or foreign specifications, etc. Since we are not a lending institution, and works are not allowed to go out of the Library, this is of great utility to anyone who is unable to come to the Library to consult the work itself, or wants a copy for his own files.

A very important class of literature, to which all technical and trade librarians should direct their attention, is the manufacturers' catalogue, providing, as it does, a very useful source of information, by showing at a glance the " state of the art " in any given industry. The collection at the Patent Office is a large one, though, unfortunately, exigencies of shelf space prevent it being added to to the extent that its importance demands. The attention of manufacturers might well be drawn to such a publication as the *Chemical Engineering Catalog*, which is a compilation of American trade catalogues in condensed form, dealing with the equipment and materials that are used in the industries employing chemical processes of manufacture. An extension of this practice to this country* and to other industries would solve, certainly, one of the problems of the special librarian.

*Subsequent to the date of the Conference, such a catalogue for the information of users of chemicals, plant and raw materials has been compiled and issued, with the co-operation of British manufacturers. The work is not on the same scale as its counterpart published in the United States, but its scope will doubtless be enlarged in further editions. (The Chemical Engineering and Chemical Catalogue, 1925. Leonard Hill, 173, Fleet Street, E.C.4. 21s. 0d.) (*Ed.*)

The Library set of trade catalogues has its own name index, but is classified in the general scheme which embraces books, periodicals and pamphlets. The whole of this material is arranged on the shelves in class order, chronologically, within each subdivision of the scheme ; the trade catalogues, pamphlets, and other unbound matter being placed in boxes adjacent the books having the same class-mark. But, as must be the case with any Special Library, it is the ever-multiplying and increasingly specialised periodical on which we rely to keep the Library's resources up-to-date, together with whatever bibliographies and indexes we can acquire. This latter class of literature is, in particular, of especial interest to this Conference, and an indispensable tool, irrespective of cost or language, of any Special Library. It would be difficult to overestimate the value to the individual worker of such publications as *Science Abstracts*, *Chemical Abstracts*, the *Experiment Station Record*, and other similar works ; and that this is now being generally recognised is evidenced by the large increase in such compilations in recent years dealing with such widely differentiated subjects as Bacteriology, Physiology, the Textile Industries, Photography, Ceramics, Glass, and so on, each with its own annual name and subject index. This country has not always been to the fore in this matter. Nor, I regret to say, can we at the Patent Office congratulate ourselves on our contribution to the question, except, perhaps, in reflected glory from the Editor of the *Subject Index to Periodicals* ; though the Library did, for a few years (from 1867-76), run a weekly journal which published the contents lists of foreign scientific serials with annual author and subject indexes, and has a MS. slip index to some sixty important periodicals, for the period antecedent to that of the printed index.

The Committee on Intellectual Co-operation of the League of Nations has in preparation an international list of current periodical bibliographies, which besides being an exceedingly useful guide, will serve to show what is being done and what remains to do ; and it is to be hoped that more support will be forthcoming to secure co-operation in this very urgent and important work.

Even, however, if this were done, and we were to obtain the perfect index to periodicals, there would still remain plenty to do in the way of co-operation between librarians. The bibliography or index is not an end in itself, but only the key to a vast amount of valuable material that otherwise it would be difficult to tap, and for an index to be of its greatest value, the works covered by it must be available with a minimum of effort and of inconvenience. In a paper given a few years ago before one of our learned societies (I cannot now remember which), data were given of an enquiry into the availability of the serials indexed in the Mathematical volume of the International Catalogue of Scientific Literature. The author showed that, of the serials indexed, not, I think, more than one-half were obtainable in this country, and that of that number, about 75% were duplicated (sometimes with imperfect sets) in two or more of the Libraries consulted. A greater degree

of co-operation amongst the libraries (especially the smaller ones whereby one of them would agree to spend that part of its income allowed to periodicals on at any rate some of the serials not regularly taken by a neighbouring library, and whereby some of the imperfect sets might have been completed, would have rendered the index of very much greater use to the worker.

The more extended our knowledge of the forces of nature, the more highly specialised our own activities become, the greater will be the need for keeping a close watch on matters outside the narrow limits of our own particular spheres, and for that full measure of co-operation which it is our object here to further.

There are still one or two other points, in connection with the Patent Office Library, that may, I think, be worthy of mention. In the first place, we print lists of our important accessions in the weekly Patents Journal. These lists are useful to us for keeping our printed catalogue up-to-date ; but, more important, they circulate amongst many of the industrial firms of the country, and serve to draw their attention to works of interest that might otherwise have escaped their notice. From the numbers of letters we receive asking for particulars of listed books, this certainly seems to be the case. Another point is in connection with our photographic copying apparatus. We do not lend out our books, but this machine enables us, within a very short time, to obtain a photographic copy of the required page of a book or periodical, or of a foreign patent specification, and despatch it to anyone who cannot otherwise consult the work itself.

RESEARCH WORK AND INDEXING AT THE LONDON SCHOOL OF ECONOMICS.

By B. M. Headicar, F.L.A. (Librarian).

I presume you have all heard of the London School of Economics? I ask the question because it is not half so well known in London as it is in America and on the Continent.

First of all, as to the scope of the Library. The Library is by far the largest in its particular province in the world, and it contains no fewer than 300,000 volumes, and 400,000 pamphlets and periodicals. The stock is increasing at the rate of 45,000 items per year. The Library of the London School of Economics is open to any serious student. It is not confined to students of the School or of the University, of which the School forms a part. It is now housed in quite magnificent buildings between Kingsway and Lincoln's Inn Fields. This is largely due to the generosity of the Carnegie Trustees. A little while ago, we only had one reading room, which sat 48 students, and at present we have five reading rooms, seating 250. You can imagine the rate of growth. There are various special collections and special departments, one of the most important of which is the collection of maps. Most of these maps have been made by the students themselves. It is extremely difficult to get economic maps which are really accurate.

I would like to introduce the question of duplicates. We get many thousands a year. We have a very excellent system of exchange with universities and other libraries all over the world. I would suggest that from your surplus stocks you could transfer sets of important trade periodicals to your local Public Library. The question of congestion is bound to arise, sooner or later, and if you can house these things in your local Public Library, it is a point probably worth your consideration.

We will now come to the actual research work done at the School. As regards the research work done by students at the School in connection with their theses: They are given, or choose, a particular subject about which they wish to write. The students come to me, and I then put them on the track of the literature of the subject. The students are asked to make a bibliography of the items they consult, with any notes as to the scope, etc., of the particular references. Typewritten copies of these bibliographies are made, and filed in the Library for reference. In the quarterly Bulletin issued by the Library, edited by myself, a select bibliography of some social, economic or political topic is a feature of each number.

We have three thousand periodicals regularly coming in from all parts of the world. One hundred and fifteen of these periodicals are searched from cover to cover, and every article is indexed, and the entry card is then put in the particular department to which it is most closely related. We do not, as a rule, index any periodical the contents of which are indexed in any of the recognised printed indexes. The point is this, that by this system of indexing which we employ, we are able to get anything in the

Library within five minutes. A larger project I have in view is what I call a bibliographical department. The index entries will be done in duplicate, and when we get an enquiry from any part of the world I shall simply take out this batch of duplicate entries and despatch by post to the enquirer, asking him to send them back when finished with. Many important articles are found in little known magazines. It is estimated that 50% of the documents in the School of Economics Library, including as they do publications of societies, trade unions, institutions, and official publications of all countries, are not to be found in the British Museum or any other Library. Other kinds of research work done by the Library staff include what you might, perhaps, call the work of an information bureau. Enquiries and letters asking for information on various topics are received from all parts of the world. You have got to live among your books, to know just where to look for information. An elementary rule in research work is—When found, make a note of. Another piece of research work we are interested in is a complete catalogue of the Library of the London School of Economics ; that is to say, an exhaustive bibliography of the whole field of economics. Our appeal for assistance produced rather disappointing results. We sent out four thousand letters all over the world, asking for tentative promises of support at £4 4s. per volume, and only a very few people troubled to send any answer to the letters. It will cost £10,000 to compile and produce.

There is another point which might be of practical interest: That is, I am surprised that more firms do not form small museums of some kind in connection with the commodities with which they have to deal. For instance, they could put up a commodity manufactured by their firm and a similar article manufactured abroad, showing the difference. They could compile a table showing the cost of their article and the cost of the one manufactured abroad. They could classify their objects in exactly the same way as you would classify your books.

We have no printed catalogue. We specialise, in the School, on our indexes. You can find information in these which you cannot get in any book. We have a complete set of British Parliamentary publications, from the beginning of the 18th century to date, as well as the publications of nearly all other governments.

A SHORT ACCOUNT OF THE SCIENCE LIBRARY, THE SCIENCE MUSEUM, SOUTH KENSINGTON.

By S. C. Bradford, D.Sc.

The Science Library is the National reference library especially devoted to Pure and Applied Science. Its origin may be traced to a special exhibition of English and Foreign educational appliances and books, held in 1854, in St. Martin's Hall, Long Acre, under the direction of the Society of Arts. Subsequently, much of the material was left at the disposal of the Society, who handed it over to the Science and Art Department, when the South Kensington Museum was formed in 1857. Here, it was placed in a portion of the temporary iron buildings. A reading room was provided, and to this collection were added gradually, partly by gifts from Publishers, Institutions and Exhibitions at home and abroad, and partly by purchase, text books on general subjects, reports and other works bearing on the history and progress of education, calendars and examination papers, and educational periodicals of all countries. The whole formed a general "Educational Library." This was augmented, in 1876, by the transfer from the central office of the Committee of Council on Education, of the library of general literature that had been formed for the use of the Inspectors. The need for a National library of Science was realised as the result of the reorganisation of the Science Teaching of the Department of Science and Art, and in 1882 it was decided to bring to South Kensington all the books in the Library of the Museum of Practical Geology at Jermyn Street not required by the staff of the Geological Survey. These books were amalgamated with the books on Science in the Educational Library, and formed into the "Science Library." Since that date, additions to the Library have been confined to works on Science.

A complete set of the Specifications and other publications of the Patent Office was added in 1886. Gradually, a comprehensive collection of English and Foreign books on Science from the earliest times has been gathered together. In 1883, the number of volumes was estimated at 44,000. By 1908, it had grown to 105,000. And at the present time it has reached nearly 150,000. The yearly number of accessions is now between five and six thousand volumes.

There are many interesting and rare old books in the Library. Undoubtedly, however, the great strength of the Library lies in its very fine collection of periodical literature, which includes sets, in most cases complete, of the Transactions of Societies, and the Bulletins, Monographs, Reports and other publications of Government Departments, Experiment Stations, Observatories, Research Laboratories, Universities and Scientific Institutions of all kinds, as well as independent Journals. Many of the older series are now very rare, or almost unobtainable, so that the collection is particularly unique. And it is largely on this account, no doubt, that the Science Library had been described as "without exception, the finest library of its kind in the Kingdom." The number of the

current periodicals is estimated at over 2,500. At the present time, special efforts are being made to obtain as complete as possible a collection of the Scientific Literature of the World, so as to make the Science Library a central Institution for study and research available to any *bona fide* enquirer.

After no less than five changes of location in the old buildings of the South Kensington Museum, the Library was moved into its present home, situated on the first and two upper floors of the Imperial College of Science, Imperial Institute Road, in November, 1908. The Reading Room is lighted by windows on the west side. On the east side are glazed book-cases, with 522 pigeon-holes beneath, for the display of the current parts of periodicals. There are two galleries running round the north, east, and south sides of the room. These are fitted with book-cases, which contain some of the periodical literature. The main book store is situated above the Reading Room, on the third floor of the building. Originally, it was fitted with steel stacks with a capacity of about 35,000 volumes. These have long been out-grown, however, and steel rolling-stacks are now in course of erection.

Every endeavour is made to increase the utility of the Library to readers, and suggestions on this subject are welcomed. The usefulness of many libraries in this country is considerably restricted by conditions of admission. Some of the special libraries in London are so hedged about with restrictions as to be of little use to students. Several Societies admit to their libraries only Members and Fellows. The Science Library is open free to the general public daily, practically without restriction. General readers are not permitted to take away books from the Library, but photographs of articles and plates may be supplied when copyright permits. Professors of the Imperial College of Science and Members of the Geological Survey are allowed to borrow books, on condition that they are returned to the Library immediately at the request of the Librarian. And recently these facilities have been extended to officers of other Government Departments.

An important consideration in which large libraries are concerned is the danger of be oming mere museums of books. Once a book is put away in its last resting place on the library shelves, in company with, perhaps, hundreds of thousands of other volumes, it is liable to be buried beyond the reach of the student, unless means are adopted to bring the books and the readers together. The Author Catalogue is useful only to those who know the name of the author of the work they wish to study. In the Science Library, before being put away on the shelves, the new books are exhibited on counters in the Reading Room for a period of about six months. During this time, readers are allowed to inspect the books and may take them to a table for study, on filling up the usual requisition form. Similarly, the current numbers of some of the more important periodicals are displayed in the pigeon-holes. The books on the Library shelves are classified only by main subject divisions, within which the books are arranged alphabetically by authors. Readers may be granted free access to the shelves, but they are encouraged to use the

Subject Catalogue. For this, a decimal classification has been prepared, which is very minutely subdivided and has a copious index. Both the Author and Subject Catalogues are on cards, which have now reached over 140,000 in number. Besides the separate works received, a selection of the more important papers is catalogued, so that the cards under each subdivision of the Subject Catalogue form an index to the resources of the Library on the corresponding subject. There are also specialist officers attached to the Library and Museum, who are glad to assist readers in finding books, or to answer inquiries.

NOTE ON THE UNIVERSITIES BUREAU OF THE BRITISH EMPIRE.

By W. H. Dawson.

The Universities Bureau is an organisation set up in 1912 by the first Congress of the Universities of the Empire, and its main business is to keep the Universities of the Empire in touch with one another, which it does largely by means of its Yearbook. It acts as the Secretariat of the Standing Committee of the Universities of Great Britain and Ireland. In that capacity it arranges for quarterly meetings and for annual conferences.

The Yearbook's most obvious characteristic is perhaps its comprehensiveness, but it is much used by specialists owing to its classification by subjects on a uniform system of the professors and lecturers in all the universities of the Empire. It aims at giving regarding each university information likely to interest teachers, advanced students and research workers. It indicates the distribution of subjects of specialist study to which exceptional attention is given in certain of the Home Universities. At the last annual conference of the universities Sir John Russell (of the Rothamsted Experimental Station), Sir Thomas Middleton (of the Development Commission), and Sir Frank Heath (of the Department of Scientific and Industrial Research), all spoke of the need of some central agency of multiplying contacts between those engaged in research work in university and other laboratories in the British Isles, and the numerous scientific workers scattered over the more distant parts of the Empire and engaged in practical work under governments and industrial corporations. The former should be made aware of the practical problems which the latter are striving to solve, and the latter should be kept posted regarding the results of the laboratory researches at home. As a preliminary step the Bureau is compiling a list of names and addresses of graduates of the home universities now engaged in scientific work in other parts of the Empire.

* * *

A discussion followed on the lack of duplicate patent records in libraries established at great provincial centres. Great expense and delay was incurred in obtaining access to the information available at the Patent Office in London.

Mr. Jast suggested that a resolution be passed that this Conference considers it desirable that collections of British and foreign Patent Specifications should be established in all great industrial centres of the United Kingdom, and that the State should contribute towards the cost of binding the specifications.

In the course of the discussion following Mr. Jast's proposition, it was brought out that a Special Committee appointed by the Library Association was urging upon H.M. Treasury the desirability of establishing a small number of " Depository Libraries " in connection with the largest public libraries in selected geographical areas, where *all* Government publications could be freely consulted by the public immediately after publication.* As these negotiations were still in progress it was agreed that the Special Libraries Conference should not complicate the issue by taking further immediate action.

* *See* Memorandum on the Cost and Distribution of Government Publications to Public Libraries, Issued by the Library Association, October, 1924.

Mr. J. G. Pearce, in regard to a point in Mr. Gomme's paper, stated that it was very difficult to get the permission of an author, especially a foreign author, in order that an article, or portion of an article, might be copied by the photostat. He would like to know how far it was essential to get permission from the author.

Mr. Gomme replied that they did not take special steps about foreign copyrights, but they had to get permission to reproduce from English copyright works.

In the discussion on Dr. Bradford's paper attention was drawn to the high price charged by H.M.S.O. for the publication " Classification for Works on Pure and Applied Science in the Science Library, 1921."

A general discussion followed on the question of the prices of Government publications, and after careful consideration the Conference passed two resolutions on the matter (*See* Resolutions 1 and 2, p. 102.) These were communicated to H.M.S.O. and to the Library Association Conference at Glasgow, which commenced on Sept. 8th.

THIRD SESSION— *Chairman:*
E. W. FRASER SMITH, Esq.

INFORMATIONAL NEEDS IN SCIENCE AND TECHNOLOGY.

By Dr. Charles L. Reese.

Presented at the Conference by W. Malcolm Corse, National Research Council, Washington, D.C.

When I was invited to attend this Conference, it was suggested that you would be interested to hear some account of the activities of the National Research Council in connection with bibliographical service.

Personally, I have not been connected with this section of the National Research Council, and have consequently looked over the information at my disposal, and selected something which I thought would be suitable.

I am proposing to bring before you extracts from a general address by Dr. C. L. Reese, who has taken an active part in encouraging and assisting the National Research Council in this section of its work, and being a Director of the large chemical and explosives Company, Du Pont de Nemours & Company, represents the opinion of some of the larger industrial interests in the United States.

Extracts from a Paper by Dr. Charles L. Reese *(Chemical Director of the E. I. Du Pont de Nemours & Co.), entitled "Information Needs in Science and Technology," and describing some of the efforts at co-ordination in the U.S.A., mostly under the National Research Council.*

. . . . Efficiency in research and in the application of its results is significantly conditioned by command of information. To the individual nation or race which most skilfully, thoroughly and wisely masters and uses the accumulated knowledge of mankind, comes supremacy in industry, if not also in science, politics, and art. Creators of knowledge through the application of scientific method to nature are prone to belittle or to ignore the devices by which information is conserved, rendered conveniently accessible, and disseminated. Rather it becomes us to inquire whether, by giving systematic attention to means of marshalling and using what has been discovered, invented, felt, imagined, constructed, we may not render uniquely valuable service to civilization . . . . The question I present to you is "How may the constructive agencies in science and industry help to bring about the designing and installation of suitable informational mechanisms?" May we not profitably bring our scientific method, habit of mind, purpose, and need to bear on this important problem, with a view to devising informational master-keys which shall render human knowledge many times more available and, therefore, more valuable?

It is obvious that knowledge, even in a relatively narrow field, has outgrown the capacity of most individuals. However encyclopedic we may be by nature or training, we can master only certain fragments of the information which mankind has accumulated. It is conceivable, however, that we should be able to construct an

informational system which would enable every reasonably intelligent and fairly well-educated person to obtain the essential information about a given subject when needed. Why should we not handle the packing, storage, shipping, and distribution of knowledge as efficiently as we manage commercial production? We have gradually devised a system of exchange, national and international, which, with reasonable satisfactoriness, enables us to enjoy the products of others' skill and industry. Such systems are imperfect, but, by comparison with present modes of preserving information and rendering it accessible to posterity, they are highly advanced.

Largely because knowledge is discontinuous and relatively unavailable, history repeats itself endlessly and tragically. Ignorance, it would appear, is responsible for more catastrophies and racial setbacks than are carelessness, selfishness, and maliciousness combined. The solemn duty rests on us to devise adequate ways and means of carrying forward always, with continuously-increasing accessibility, the sum of useful knowledge and experience. The fact that the task has not been done is good evidence of its difficultness, not of its impossiblity or its lack of importance.

DEVELOPMENTS DURING THE WAR.

The World War at once revealed some of the weaknesses of our informational position and our ability to remedy them. When the tremendous need for munitions and men came, we were plodding along, self-satisfied and generally oblivious of the fact that we commanded relatively little information. Almost overnight, investigators and industries became aware that knowledge of conditions, discovery, invention, production,—in a word, efficiency of effort, was lacking. Intelligence bureaux, informational departments, staffs of abstractors, indexers, compilers, and purveyors, appeared suddenly all over the country. What Germany had at hand in 1914, because of her superior foresight and appreciation of the supreme value of systematized available knowledge, and of the indispensableness of research, we were compelled to try to create at high speed and with feverish haste. It is enlightening to examine some of our information-seeking activities in their relation to our present need and opportunity.

Commercial Activities.—My own Company, when it undertook a number of new lines of manufacture, beginning during the latter days of the War, recognised the need of more extensive and more comprehensive information along these lines. An Intelligence Division was therefore organized, charged with the collection, integration, and dissemination of technical information on the subjects in which we were interested. At the time of its maximum activity, this Division was spending $80,000 per year for salaries alone, and comprised a personnel of thirty-five men and women.

Governmental Work.—Of Governmental informational activities, certain notable instances should be mentioned. The Food Administration perfected a Staff and statistical machinery,

which provided it with unprecedentedly complete intelligence concerning food production, distribution, consumption, waste, and prices. The statistical department of the Food Administration, as was generally recognised during the War and has since been made clear by its reports, functioned with marvellous efficiency as an intelligence agency.

With a view to enabling the Federal Government to command such available information as was essential for wise action, a central bureau for planning and statistics was organised, and, at the height of the need, operated for several months. But as soon as the need began to diminish, this admirable idea and its initial expression were abandoned. Thus was once more exemplified the general inability to appreciate the importance of providing organisations and apparatus to make human knowledge readily available.

In the Army and Navy, intelligence services, with the advent of War, emerged from dark corners and spread knowledge-seeking tentacles throughout the world. Rapidly, these military bureaux evolved systems of gathering, classifying, and distributing information of essential importance to a nation at war. For a time, the military departments were immersed in positive and negative intelligence, much of which, doubtless, was generally available to enemies as well as allies. Probably it will require years for these protective and defensive intelligence services to sink again into that oblivion which ignorance of world conditions tends to encourage. Seemingly, the more ignorant a nation, the safer it feels; and certainly, the more ignorant an individual, the less he appreciates the possible values of knowledge and of instrumentalities for commanding it.

National Research Council.—Last, because it is first in our interest as investigators, mention may be made of the informational work of the National Research Council. This was begun while the Council served as the Department of Science and Research of the National Council for Defence. At first, there was organized a Research Information Committee, with headquarters in Washington, and offices in London, Paris, and Rome. The principal and important function of this Committee was to gather information about current research of military significance, and to distribute reports of such work to appropriate military and civilian agencies. The Committee served, through its staff of scientific directors and attachés, primarily as an information gathering and disseminating agency. Its success led to subsequent reorganization as the Research Information Service, concerning which more will be said later.

The various informational activities which have been selected as examples of types are all of them indicative of the need and opportunity which, compelling during the Great War, are always with us, and are far more worthy of serious study and effort than is generally realized.

Research Information Service, National Research Council.—From the Research Council's Committee on research information, following the Armistice, was organized a division of

the permanent Council called the "Research Information Service." It was my pleasure and responsibility to assist in planning, organising, and furthering this informational agency. The Service has now been available for three years. During the first two years, attention was centred on the study of the informational situation, the formulation of plans, and the creation of fundamental informational tools. From three years of effort to discover, understand, and satisfy informational demands, certain principles of organisation and policy have appeared. These have been carefully considered by an organising committee which is representative of research interest and of the principal industries and types of informational agency of the country. Foremost among the principles agreed upon by this Committee on organisation, are the following :—

(1) The desirability of developing initially a general clearing-house for scientific and technological information rather than a mere storehouse or depository of knowledge.

(2) The conduct of a free informational service, for the promotion of research, useful applications of its results and the supplying or disseminating of knowledge necessary for or beneficial to human welfare and progress. It is recognized by the Committee that there is a practical limit to the possibility of free service, beyond which charge sufficient to cover the cost of service should be made.

(3) The encouragement and fostering of a miscellaneous request service, initially limited to scientific and technological knowledge, which shall strive to supply reliable information concerning any aspect or relations of research. Especially to be mentioned in this connection, is information concerning research problems, projects, methods, processes, results, current work, laboratories, persons engaged in constructive or creative work, publications, and bibliographies.

(4) The primary task of the special staff of the Research Information Service is set forth as the designing and construction of informational keys, instruments or tools essential to the efficient functioning of a clearing-house for human knowledge. The final purpose in endeavouring to create informational instruments is the development of a complete co-ordinated machinery for gathering, classifying, locating when needed, and disseminating trustworthy information.

(5) Utilisation by the Service of correspondence, informational publications, and publicity, as ways of meeting the informational needs of organisations and individuals, and of educating the public to appreciation of the possible values of a carefully-planned and efficiently-conducted informational clearing-house. . . . .

Even casual observation serves to indicate the scattered and special character of sources of knowledge, and the extreme improbability that a needy individual will happen upon the right source. It is only by happy accident that one locates satisfactory information outside the field of his special interest and activity.

There is neither co-relation nor co-ordination ; there is not even a central medium of communication to place those who desire information in touch with those who have it. It is proposed, therefore, to make the Research Information Service of the National Research Council a great clearing-house for informational requests, and thus to increase the availability and value of existing sources, and to supplement them as necessary. The Service will not strive for encyclopedic knowledge, save of sources, but undoubtedly its files will gradually acquire value. Ultimately, it may become a great informational centre, as well as clearing-house. . . . The Service has undertaken to develop, as its fundamental tools, first, a list of informational sources including individuals as well as organisations, specialists as well as informational bureaus ; second, it is building up a library of source books which it is hoped may ultimately become an invaluable master-key to published information. . . . The Research Information Service of the National Research Council is a public service agency. It is ours to make or to mar, to use or neglect. It urgently invites our co-operation, and freely offers its aid to us individually and collectively. We cannot afford to do less than interest ourselves intelligently in this difficult undertaking, whose possibilities of usefulness are almost limitless, and to endeavour to aid in so directing its further development that it may command our support increasingly. . . .

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This paper by Dr. Reese was read in April, 1922, and was succeeded by an active period, during which the National Research Council put into action many of the schemes described. Unfortunately, owing to the stringency of financial resources, it has been necessary to limit the extension of this work, as the annual allocation has been reduced from $40,000 to $15,000 per annum for the Research Information Service. One reason for the decision to reduce the allocation to the research information service was that the report of a Special Committee appointed for the purpose showed that, in order to do this work properly, it would be necessary to allocate from $100,000 to $150,000 to it. This was obviously impossible, with the funds in hand, and it was therefore felt that to carry on the existing plan it was better to curtail it until such time as a new plan could be devised, or the one on which the Special Committee had made its report could be financed.

However, several examples of the type of work proposed have been published in special issues by the National Research Council, of which the following will serve as illustrations :—

HOMER P. LITTLE. *List of Manuscript Bibliographies in Geology and Geography.* February, 1922.

C. J. WEST and C. HULL. *List of Manuscript Bibliographies in Chemistry and Chemical Technology.* December, 1922.

C. J. WEST and C. HULL. *List of Manuscript Bibliographies in Astronomy, Mathematics, and Physics.* March, 1923.

C. J. WEST and C. HULL. *List of Manuscript Bibliographies in the Biological Sciences.* June, 1923.

EDWARD B. MATTHEWS. *Catalogue of Published Bibliographies in Geology.* October, 1923.

If anyone is sufficiently interested in the work of this division of the National Research Council, it is possible to obtain copies of these reports, or at least, considerable information about them, from the National Research Council itself.

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Dr. R. S. Hutton. This account of the American outlook on the subject is of great interest. Undoubtedly the appreciation of special libraries and information service has developed further in that country than in our own. There are distinct signs, however, that both in scientific and industrial work there is developing a call for workers specially equipped to serve as experts to marshal and review the existing knowledge on scientific and technical problems. The use of special staff for the purpose is most desirable since there is reason to believe that psychologically there is something detrimental to originality in allowing the first-class investigator to get too deeply involved in the attractions of bibliographical searching.

On the other hand the professional librarian has his distinct métier and is too fully occupied with his own essential work to be qualified to handle and assess the technical aspects of any particular field.

Thus one may hope to find developing a corps of scientific workers ready to undertake posts as information bureaux staff in the openings which appear likely to develop somewhat rapidly in our industries, etc.

Another field for potential specialists at present quite undeveloped lies in the translation of technical and scientific literature. Some few years ago, in connection with the Sheffield Chamber of Commerce, I started a modest scheme of forming a panel of approved technical translators, the idea being that inclusion on the panel required the dual qualification of a thorough knowledge of the language and some practical acquaintance with one of other of the few staple industries of the district. Possibly the formation or such panels might form a useful function of the future development of our work.

Mr. E. W. Hulme. I would like to emphasise the importance of the point that Dr. Hutton has raised, as to the necessity of a liason officer, a highly technical man, to act as a go-between between the librarian who amasses the material, and the practical administrator, or even head of a Government Department.

Mr. P. K. Turner. From the point of view of the user, I should like to put forward that same point. The special library is not sufficient for the purpose of the person who is in search of scientific information : firstly, because much of the information is in the form of books, whereas the research workers information. They must be told whether it is available. That raises the big cases, cannot afford time to search the library, to find out whether it has the information. They must be told that it is available. That raises the big question of what they are going to be told. Unless the man who drafts the letter to you knows your needs very well, it is quite likely that he will not convey to you the information you want. This makes things difficult. Either much information would be sent out that was not immediately useful, or it means a very versatile expert staff in the service of the library who can provide lists of the available information for the most varied people. The question of cost has been raised. Could anyone give any idea of what would be the cost of the information bureau, as apart from the cost of the library, which would volunteer to subscribers information telling you of the new articles on its subjects, where contained, and would actually give abstracts of the information ?

Mr. D. Finlayson. Our Research Association is prepared to answer questions on any specific problem in the Motor Industry, and I should think the cost would run to about £2,000 per annum. I believe that the British Aluminium Company spend a similar amount on their abstracting service, for their industry alone.

Dr. J. C. Withers. I think that the most regrettable thing we are faced with is the discontinuity of all these efforts. Supposing one wants to find out all that has been done on a certain subject. It is not much help to find that some big organisation has covered a bit of the ground. The searcher feels that he will have to ignore that, and go over all the ground again.

Col. E. L. Johnson suggested that a small committee might be formed ; some interchange of resources might be brought about.

THE TECHNICAL LIBRARY AT ROWNTREE AND COMPANY'S COCOA WORKS, YORK.

By H. Vincent Garrett, Chief Librarian.

May I begin my brief description of Rowntree & Company's library by asking you to pay an imaginary visit to that library.

Visualise a room about forty feet long by eighteen feet wide. Four steel bookstacks fitted with double-faced adjustable shelves, and placed three feet apart occupy rather less than half the space. And these stacks are by no means loaded exclusively with books. Indeed, you will estimate that, including many bound volumes of periodicals, there are not more than, say, two thousand five hundred books on the shelves. You will note, however, that much shelving is devoted to cases in which are filed innumerable pamphlets, catalogues, patent specifications, consular reports, typescripts, etc.

Leaving the bookstacks your attention is drawn to a large range of steel vertical filing cabinets. These cabinets hold thousands upon thousands of clippings, varying from a paragraph giving a few trade statistics to an article of many pages, taken from a magazine or even from a book. And, incidentally, you will notice that the cabinets to which the latest clippings are allotted, contain more charging-out slips than clippings, indicating that quite seventy-five per cent. of the latest indexed information is in circulation.

We now proceed to the magazine rack which covers one end of the library: from floor to ceiling. We find flat and sloping shelves in alternation. These shelves hold, respectively, the back numbers of current volumes of periodicals that are filed intact and the latest issue; or, more often than not, charging-out slips consequent on the latest magazine being in use. I may here interject the remark that we find it expedient to cut up more than half the magazines for which we subscribe; which procedure accounts for the many clippings.

The remainder of the library space contains several 60-drawer card index cabinets comprising our central index which controls all forms of literature on file. Note also the usual office equipment: desks, tables and soul-stirring telephones.

Taking a general view of the library you will see, perhaps, a chemist in one of the bookstack aisles, abstracting data from a book. And you will notice people continually at the central index —clients seeking specific information as well as those members of the library staff whose functions include the handling of inquiries. Further, if you remain in the library no longer than half an hour you will be astonished by the chronic use of the telephone—mainly by people requesting information that can usually be given off-hand, either by resort to our many reference books or by referring to the central index.

I think you will conclude that the department is much used but that it is not a library in the generally accepted sense.

We will now end this imaginary visit of inspection and discuss a few salient matters bearing upon this library (so-called) in particular and industrial libraries in general.

Our common conception of a library is, rightly, a collection of books. But, for industrial purposes, a collection of books would be of but small value in comparison with the type of library that I am trying to describe. Quite ninety-five per cent. of the inquiries handled in my library are, not for specific books, but for *information*. Allow me to emphasize this assertion by citing a few typical inquiries :—

1. When did the cost of living index figure fall below eighty per cent ?
2. Supply sale prices of rubber Wellington boots.
3. What is the flashpoint of paraffin ?
4. Literature wanted on the organisation of a Sales Department.
5. Data asked for on the condensation of steam in covered pipes and in bare pipes.
6. Give the exact location of Stamford Hill and the quickest way of reaching it from King's Cross.
7. Supply information on Staff Training.

Let us supposititiously deal with this staff training inquiry. We go to our central index, turn to the appropriate guide card, behind which we find index cards of divers colours and pertinent to our subject. (The colour scheme by the way denotes the several forms of literature that we use : clippings, pamphlets, etc.). These index cards contain digests of the literature, number of pages or approximate number of words comprising each item, source and date of the information, and the " call " number. And the cards are arranged in descending datal sequence so that the latest information is the first to be consulted. We find cards directing us, probably, to books wholly devoted to the subject of our inquiry, cards indicating a section or a chapter in another book, cards controlling pamphlets, articles abstracted from periodicals, typed reports, etc. And further reference to the guide card leads us to published experiences of staff training work accomplished by individual firms.

I present these lengthy illustrations with the object of describing the service expected of an industrial library and to show that this type of library is not a Book Department but an Information or Intelligence Department. Time does not permit of my explaining my indexing scheme. But, with your permission, I will outline the method of handling incoming literature.

We subscribe for about two hundred magazines, including many from foreign sources. And while periodicals are predominant and account for quite half of our annual expenditu e on literature, amounting to several hundred pounds, we buy pamphlets, books and other kinds of literature as already

mentioned. On arrival, periodicals are checked by means of register cards and given their " call "numbers. Standard practice is followed in the accessioning of new books, etc. Periodicals treating of technical subjects—chemistry, engineering, for example—are sent to specialists in the departments concerned, who earmark items that merit indexing and then return the periodicals to the library. Periodicals of more general commercial interest are examined in like manner by a library assistant whose time is given wholly to the selecting, summarising, and indexing of useful matter.

Following the indexing process, bulletins are compiled on all subjects of interest and sent, each week, to directors and officials of the company. Thus the distribution department is supplied with the latest information on advertising, sales statistics, marketing, transport, etc. The central purchasing department is supplied with market reports, compiled by the librarian. In short, the bulletin service provides a mine of current information covering the whole range of the firm's activities.

Trade periodicals that include information of only ephemeral value and not of indexical merit are circulated among appropriate officials by means of circulation slips and independen ly of the bulletins. We draw the recipients' attention to useful ephemeral information by a note in the remarks column of th circulation slip. This scheme obviates the necessity of indexing information that is of but passing value.

Bulletin items summarising foreign literature are given in English. Typescript translations of foreign literature are supplied on request. We offer translations from French, German, Dutch, Spanish, Italian, and, as an occasional mental calisthenic, Portuguese.

Yet another library function worthy of note is the preparation of select bibliographies. As occasion arises we prepare bibliographies itemising all information on file, on any subject calling for special investigation or research.

In justification of this library service I venture to quote one of my director's comments upon a report that I made after the library had been operating for a period of six months. The director stated that " . . . the information made available by the library has not only led to many actual savings and improvements, but has stimulated thought and suggested lines of inquiry in quite a remarkable way." " It appears," he continues, " that there are possibilities for the future beyond anything I had thought likely."

In conclusion, I believe that it is commonly agreed that the rule-of-thumb era has run its course and that, in these perplexing times, anyone who relies upon his personal experiences and predilections is assuredly encouraging the process of effacement.

The effective operation of business undertakings is becoming increasingly dependent upon *organised information.* I submit that information, gleaned primarily from the ever increasing mass of literature now published is a commodity just as valuable, as

real and as important as are things of a tangible nature—provided that the information be well chosen, properly organised, and used by people capable of giving it proficient interpretation.

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In reply to a query respecting the systematic selection of media Mr. Garrett replied that he was continually on the look out for any new literature likely to be of value to the Company. If he came across anything he obtained specimen copies, and then submitted them to the people most likely to be able to decide whether they were worth while, and in turn officials and directors of the Company sometimes in the course of meeting other people came across magazines and other literature not previously taken in the library, and brought them to his notice.

THE PLACE OF THE SPECIAL LIBRARY IN PRESENT-DAY INDUSTRIAL PRACTICE.

By Miss L. Stubbs,

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It is probably quite safe to say that there is no industrial organisation that has not its collection of books, journals and other material for a library and that, whatever the standards of completeness and efficiency by which it is administered, it does form an essential tool for the work of the staff. It would be profitable to arrive at some clear idea of the standards of completeness and efficiency that are desirable and economic, that is to say how far the special library, as we call this collection, must by itself serve the needs of the organisation and how far it may be a channel for the flow of information from libraries, and bureaux, and other great sources of knowledge. I have made my comments in this contribution to the discussion from the following points of view :—

1. The actual position of the special library as a unit in itself in relation to the divisions of an industrial organisation ;

2. The divisions of an industrial organisation and their requirements of a special library, both as a unit in itself and, equally important, as a link with libraries and bureaux and other sources of knowledge ;

3. Bibliographical apparatus ;

4. The relation of the special library to the world of libraries ;

and all my comments relate to the requirements of an engineering works as a typical industrial organisation.

In the cold light of reason I suppose a special library might be independent for it is at the equal service of every member of the office and works staff and in the ideal case where the special library is at the equal service of every member of the office and works staff of an industrial combination it might actually be an independent department. But generally in practice it is too small a thing to be independent and the requirements of every member of the office and works staff are not equal—and whatever instances can be quoted to the contrary, I think there is no doubt that the Research Dept. is its spiritual home. There is first a similarity of structure, for as the organisation of a works into various departments in a degree dictates the organisation of a Research Dept., the various engineering departments calling for mechanical, electrical, chemical and metallurgical laboratories, and the manufacturing departments from forge and foundry to test-beds, calling for process sections to exercise technical supervision over all shop processes, so there is a corresponding reflection in the nature of the matter collected in the library ; so that when each section of the Research Department has its own appropriate collection of books, etc., it can be felt that the

needs of the entire works are fairly met. Now though in what follows I have spoken chiefly of published information, I must emphasize here that the most valuable and immediately useful information that any special library can acquire is of a confidential character, and not least either in bulk or in importance is that resulting from the investigational work of the Research Dept. When the special library is attached to the Research Department all reports pass naturally to the special library for cataloguing and filing. The same applies to all information coming in from Research Associations, allied concerns, and so on, and in the case of a very large organisation the range is world-wide. The Research Department by nature of its activities makes the largest and most varied demands on the library. It calls for bibliographies and surveys of literature, in preparation for investigations to provide new data either for improved designs or for entirely new developments,as for instance radio engineering, or to explore the properties of materials. It looks furthest ahead into the regions of pure science. On the other hand the library has in the Research Department the strongest and widest support to its own weak technical knowledge. For administrative reasons too it is convenient, for its cost can be merged with the unallocated costs of the department and spread as an overhead charge over the factory, or can be met out of income specially assigned each year to the department, according to the system in vogue in particular works.

The divisions of a manufacturing organisation follow certain well defined lines, and there is an abundant literature on the subject. The divisions of a large engineering works have been outlined by Sir Holberry Mensforth in a paper read before the Manchester Association of Engineers in 1920, and in considering the requirements of the various divisions, namely, commercial, engineering, manufacturing, research, accounting, purchasing and storekeeping, I have followed fairly closely his exposition and have borrowed his phrasing.

Perhaps in what follows I give a little more form to my comments if I mention the names of books and journals, but it should be understood I give only one or two and merely as examples.

"The commercial departments handle work arising in connection with enquiries, quotations, tenders and orders," and the first call which they make on a special library is the receipt, on the day of issue, of journals in which tenders are published, as for instance, *Electrician*, *Electrical Review*, *Tramway and Railway World*, and journals giving trade conditions and regulations. It follows that several copies may be required to avoid delay through one copy having to serve several sections. As a rule the only other requests made by the commercial departments are for publications, usually standard specifications, to post to customers and despatch is the only quality they call for, though I may add here that from the point of view of their own internal organisation they are interested in the literature of sales management.

"The engineering departments are responsible for the

designing, drafting, and specification of all lines of apparatus and for development of new lines." They each possess vast accumulations of drawings, curves, formulae and notes but they require these to be supplemented by a certain amount of printed non-confidential matter, which can very properly be supplied by a special library—namely first a collection of reference books and pamphlets (and frequently more than one copy of each) containing valuable data in a form of use to engineers; for a mechanical engineering department let me instance Callendar's books and tables, Stodola's "Dampf-und-Gas-Turbinen," Goudie's "Steam Turbines," reprints of H. W. Martin's contributions to *Engineering*, standard specifications as issued by the B.E.A.M.A., B.E.S.A., etc., and foreign bodies, reports of Government Departments, and advance copies of important papers. Secondly they require copies of current technical journals to be circulated to them, important journals on the day of publication or of arrival in this country, again with the same reservations, let me say *Engineer*, *Engineering*, *Z.V.D.I.*, *Mechanical Engineering*. Thirdly they call for the loans of books, journals, and other publications as they require them in the course of reading on any particular subject. In the development of new lines if a request for information is made to the appropriate section of the Research Department, it is that section and not the engineering department which calls for the preliminary survey of literature, but where the department does not require tests or an investigation but only literature a request is made direct to the library. The necessary search through the catalogue and indexes is then made and from the material supplied the engineer making the request calculates his new formulae. Some engineers consider this a most valuable help. If a description of the state of the art is wanted, the digest of the literature can be made in the library. The estimating sections of the engineering departments require receipt on the day of issue of journals containing price lists of materials and products, for instance, *Iron and Coal Trades Review*. The manufacturing departments require the circulation to them of appropriate manufacturing journals, such as *American Machinist*, *Machinery*, *Engineering Production*, and they have a deep interest in the literature of workshop management, systems of wage payment, and workshop production.

"The Research Department is the scientific focus of the works and is responsible for the technical control necessary in maintenance of quality of materials, and for works processes. Investigations incidental to the development of new materials, processes, and apparatus, and arising from difficulties in manufacture, are undertaken. Special attention is directed to testing new ideas and suggestions." A watch is kept on the field of pure science.

The sections of the research department each require their collection of reference books:—the chemical laboratory chemical dictionaries, and works on methods of analysis and industrial chemistry, the mechanical testing section works on mechanical testing and the strength and fatigue properties of materials, the

metallurgical section standard metallurgical books, the physics section certain German and English tables of constants, and so on. They require the current scientific and technical papers to be circulated to them ; they require the loan of books, journals and other publications as necessary in the course of their reading. As I have already mentioned this department calls for lists of references, which are compiled in our own and other libraries from catalogues, abstract journals, indexes to periodical publications and the indexes of special appropriate journals.

The education department requires its own collection of educational year books, calendars of universities and technical institutes both at home and abroad, and outlines of the training schemes of other manufacturing concerns. The college apprentices provide the special library with perhaps its steadiest reading load and a number of text-books and technical primers in all branches of engineering are kept in the library to meet their requirements as they pass from one department to another in the course of their training. No journals are circulated to them but a reading table containing current issues of about a dozen journals is kept in the library and it appears to be largely provided for their use.

" The accounting department deals on the one hand with all works costing and determines all the elements making up factory costs, and, on the other hand, with the financial records of the company." Its requirements are for a permanent collection of books dealing with works accounts and costing, and the organisation of offices carrying on this work, and for a regular circulation of journals dealing with works and office organisation, accounts and costing, and giving prices.

The purchasing department requires chiefly the circulation of journals relating to materials and giving prices. This department requires a large collection of trade catalogues with a very complete analytical index, the special library keeping only such catalogues as are of interest to the Research Department in collecting information relating to materials. In the Works to which I am attached the Purchasing Department carries out its own work on the collecting and indexing of trade catalogues.

The employment department has of course wider functions than merely acting as the central agency for obtaining new staff, the employment manager having a general responsibility in regard to benevolent schemes, unemployment and health insurance, compensation, and in matters relating to the health and comfort of the worker. Besides the usual collection of general books, dealing with questions of employment and industrial law, and the circulation of journals, such as the *Ministry of Labour Gazette*, the department has to be kept supplied with factory regulations of the Government, Home Office and other department publications, and occasionally calls for a list of references or a review of literature, as for instance on Conciliation and Arbitration. The question of the selection of workers and of starting them aright on their work, and the whole problem of labour turnover is becoming of pressing importance

and there are many important books, mainly of American origin, which a special library must obtain for the employment manager.

In the library building itself must be kept to meet the requests of borrowers a small selection of books in the sciences and in the mechanical and electrical branches of engineering, in education, economics, psychology, and the new developments of commercial statistics, sets of journals for five, ten, or it may be more years, both bound and unbound, pamphlets, standard specifications, patent specifications, and a collection of bibliographical data for the use of the library staff in compiling lists and verifying references. But it should never be regarded as more than a nucleus and should be constantly supplemented by borrowing facilities from other libraries, or special purchases.

Under the somewhat vague heading of bibliographical apparatus, I have endeavoured to define by what means the library does its work for all the divisions of a manufacturing concern and takes an active interest in supplying and forestalling the requirements of the works. This brings me immediately to the question of nomenclature in relation to staffing. Taking the term " special library " to cover the printed and published and confidential information acquired, recorded, distributed and filed in accordance with the requirements of in this case a manufacturing concern, we find that the " special library " is in charge of a " special librarian " and " special library " assistants who understand " special library " economy but who do not understand science or engineering, or works management, or statistics, or the subject matter of any of the books they keep. A " special library " cannot therefore be effective without the assistance of a technical staff. The technical assistants and the special librarian sometimes together form what is called an intelligence section under a section leader who combines with his technical knowledge a highly developed, what one may call, book-sense, and in this case the special library frequently loses its distinctive name. Sometimes the technical assistants and the special librarian are equal colleagues, responsible directly to the head of the department ; in this case the special library retains its name and the technical assistants take appropriate names, such as technical intelligence service, and statistical and economic survey, and pure science liaison.

To deal first with the acquisition of books for the library and the departmental library, there may be a specially-appointed selection committee or books may be purchased at the instance of heads of departments and heads of sections of the Research Department, with the O.K. of the head of the Research Department. Heads of departments frequently receive notices of books and in all cases watch the book notices in current journals carefully. The library keeps a close watch on book notices in the daily press, technical and scientific press, on publishers' lists, the accessions lists of libraries and the lists published each month in *Nature*, and send notice of interesting books to engineers concerned. However, the number of purchases is small, for reasons of economy

of time, space and money. The selection of the journals for continual circulation to the departments and the fixing of the numbers of copies of each journal need constant revision, though the opportunity for a complete overhauling rarely comes. The circulating system except for those first on the lists is not really satisfactory ; great delays are involved, there is a considerable wastage of time in looking through the periodicals, while at other times important journals are not opened, and there is a big danger of total loss to the library. However it is in practice workable and there seems to be nothing to take its place. The circulation is supplemented by a systematic scrutiny by members of the Research Department as well as the library staff and notices of contributions of interest are sent to all departments. The Research Department staff indicates contributions in journals received in the works and the library staff indicates contributions to other journals, both by regular scrutiny of journals received in the city and university libraries, and by a close watch of the abstracts sections of the journals of its own library. But in all cases the actual notice containing the reference and comments is sent from the library. Beyond this the initiative in directing the reading of engineers and in providing them with digests rests with the technical assistants in the intelligence section (or as the case may be with the groups under different names). Reading in the engineering departments is a long and well-established function and any guidance in subject matter from the library would be in the nature of an absurdity. These departments know what is of use to them and call for it definitely, so that while they call for technical assistance in the compilation of lists and digests, they do not give great scope for initiative either in directing their reading or in presenting data to them. The most fruitful field for this is the new development of commercial statistics and my colleague in another paper has given some idea of the service which can be and has been rendered to boards of management, commercial, and purchasing departments, by indications of price and trade tendencies.

The compilation of lists of references is usually in the hands of the technical assistants. A straightforward list of references on a fairly clearly defined subject can be easily compiled by a special library assistant, lists on more specific technical problems are more easily compiled by the technical assistants, and searches involving evaluation of papers and abstracting can of course be done efficiently only by the technical assistants. It follows of course that there is a big loss of efficiency if the librarian and technical assistants do not co-operate fairly closely for in the end the librarian as a rule has the best knowledge of sources. Any reference that I might have made to sources has been recently said very compactly by Mr. A. B. Eason in his pamphlet " Where to look for Scientific Facts." The special library should possess sufficient source material to satisfy the requirements of most enquirers, but where an exhaustive search is needed the further source material is found, in our own case, in the city, University and College of Technology libraries. We also find it a great

convenience and a great saving of physical effort to have the indexes of each journal that we file stitched together in folders.

There is no doubt that at first a special library needs persistent advertising ; in my own case this advertisement was made by the leader of the Intelligence Section, who was then responsible for the library, unremittingly through a number of years. It is now well known throughout the works and almost without exception turned to as the first and obvious source of all printed and published information. I might mention here, though it is probably quite well understood, that a special library is not allowed to answer " no " to any genuine responsible request, but must endeavour to obtain from some source or other whatever publication is required.

This brings me to my fourth and last point of view, the relation of the special library to the world of libraries. I do not think that any of the work, unless perhaps the exhaustive search, that I have touched upon can be conveniently carried out for a works except by a member of the staff, but it is equally true that a special library, in respect of printed matted has to be kept to the least possible dimensions, confined in fact to that for which there is a definite and sure demand. Engineers have no great amount of time for reading and no firm can afford to build up an elaborate library of books for which by reason of the limitations of time there can be very little demand. As a rough guide possibly a library of 2,000 reference and text-books, the files for twenty years of ten or a dozen journals, for ten years of fifty and for five years of another fifty, and 3,000 pamphlets, Government publications and standard specifications, can, if carefully selected, discarded and renewed meet the ordinary needs of a very large manufacturing concern. But the work of the library would be greatly handicapped if there were no facilities for borrowing from the great libraries. If there is a University lending library within reach, arrangements should be arrived at for the loan of books. I cannot sufficiently emphasize the great help which my own library receives through loans from the University, College of Technology, and Municipal libraries. Loans from the libraries of institutions and societies can be obtained through members, and it is the business of the special librarian to make these connections. This ground has probably been fully explored and exploited but possibly the greatest help should now be derived from the bureaux of information set up by the Research Associations, a help which need not be confined to loans but which can be extended to requests for information on the literature of subjects. This conference will probably be fruitful in bringing special librarians in industry into personal touch with the librarians of the big information bureaux, from which a very wide and real extension of the efficiency of the special library can immediately follow. From the point of view of staffing it is desirable that the special library should be in charge of one who has had the usual orthodox training in general library methods, and experience preferably in university or technical library work, to which it is most closely akin. At the same time it carries with it small prospect of

expansion or of promotion. The greatest scope does not therefore appear to lie in an individual concern, but probably rather in the central bureaux which serve entire industries, and possibly in the public technical libraries which are being established and already proving their great worth.

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In the course of the discussion Miss Stubbs said that in principle the library made all purchases and took out all subscriptions to journals for all departments of the works, but that the Publicity Department made all purchases and subscribed to Journals for the District Offices. Most of the requests dealt with were for information on scientific and technical subjects, the reports on business forecasting, prices and trade tendencies, etc., being issued by a separate section of the department.

FUNCTION OF AN ECONOMIC STATISTICAL BUREAU IN A MODERN WORKS ORGANISATION.

By Miss A. L. Bennie,

Research Department, Messrs. Metropolitan-Vickers Electrical Co., Ltd.

In recent years considerable interest has been taken in subjects which have only indirectly a bearing on industrial production, and it is generally being recognised that the old unscientific system of production and sale is scarcely sufficient to meet the complex requirements of modern industry. The necessity for a more scientific examination of the trade possibilities of foreign markets has long been felt in the United States and Germany, and latterly in France; in those countries the Economic Advisory Bureau has ceased to be a curiosity to be investigated at moments of leisure and has entered quite differently into the cycle of production. In some respects the trade cycle came as a God-send to the Economic Bureau in U.S.A., and there is no doubt that the slump which has taken place during the last few months in American industry has been discounted to some extent by the preliminary warnings which were issued by the Economic Bureau.

In this country the only approach to such an organisation has been The London and Cambridge Economic Service, organised by the School of Economics at London and the University of Cambridge, and there is no doubt that the surveys issued monthly by this bureau are being studied with considerable care. It is difficult, however, to see how any special industry or any special firm can benefit directly from the information supplied by this service, since, in the nature of things, they can never hope to meet the special needs of any special industry or any special Board of Management. There is room in industry for such a service, but there is also room for a service which, working under general information supplied by this and similar organisations, will apply a method adopted by them to special cases and make it possible for one industry or one firm to survey international developments in its own sphere and take steps accordingly.

We know that such a bureau has become an absolute essential in the banking industry and the monthly reports issued by the banks are models of the type of information which has a direct value. We know also that the shipping and insurance industries work on the foundation of exact knowledge supplied by economic bureaux maintained by them. Apart from those, however, the ground is practically virgin in Britain, and it has long been felt by certain industries confronted with intense international competition that something more than rule of thumb should govern the decisions taken by any director or any Board of Management.

This consideration applies specially to the industries which depend very largely on export trade and to those branches of the industry which are devoted to the foreign market alone. The

majority of the firms in this country show a clear line of demarcation between the home side and the foreign side of their activities and have created special companies to deal with them.

What are now the functions of the Economic Bureau? The course of evaluation of information from the rough state to its last triumphant culmination in a movement of policy taken by a Board of Management is four-fold:

a. Practically all trade and economic information of any value is published in some shape or form and it is only necessary to make a judicious selection of the *key* journals and publications of the main industrial countries which are instrumental in guiding industrialists. In addition to this, attention should be devoted to the Annual Reports issued by the trading departments of the various governments—foreign trade and employment statistics for example—special investigations carried out by industrial associations and the balance sheets of the main industrial concerns. This information acts as a basis and any special investigation carried out bearing on one aspect of trade will begin with it and simply fill in *lacunae* from investigations made on the spot and from special publications dealing with the subjects in question.

b. The second stage in the evaluation of economic information lies in abstracting what might be considered fundamental articles containing statistics and other information often officially of a strictly reliable nature. The mere artifice of filling up cabinets with cuttings is generally found to be quite useless since time is considerably entailed in indexing and cataloguing such information and the investigator is forced to read an immense amount of useless material before he gets to real fundamental points of knowledge. This section may be considered as a first step in simplification of information for the special requirements of industry or the firms in question.

c. The statistician gathers up this economic information and working on it delivers an opinion on trade tendencies and movements in the main countries and generally prepares a report summarising the main lines the trade has taken in any special market with reference also to financial and at times political movements of policy, and he gives then a reasoned statement with regard to future possibilities of the market in question. This method can be applied also to consideration of labour problems, wages and even economic theory. On this point the information has been simplified to such an extent that it can be digested readily by a Board of Management or by a Director.

d. A further development which has been most marked in the United States has been the Economic Advisory Committee, the sole function of which is to digest information supplied and report periodically to the Management. This Committee has generally very considerable executive powers and they determine the whole policy of a firm. From many points of view such a body represents perhaps the best form an economic survey could take.

The activities of the Economic Bureau proper begin and end

with the collection and abstracting of information and it justifies itself simply through the initial work of collection and simplification it carries out ; it has generally been found that a firm working on exact information supplied by such a bureau can estimate fairly closely the amount of trade and the prices certain markets are capable of yielding in a given period, such an estimate being based on a very close examination of trade tendencies and movements. The Economic Bureau has still to be introduced on a large scale into this country but it is obvious that, if our foreign trade is to be maintained at its pre-war level and even raised above this, much closer control of trade knowledge and of trade policy in foreign markets must be realised. The first essential in such a development lies in the economic and statistical bureau devoted to the collection and abstracting of essential trade information.

BUSINESS RESEARCH AND MARKET ANALYSIS.

By H. G. Lyall, F.C.I.,

Director, The London Research and Information Bureau.

An American authority has defined market analysis as " the application of scientific principles and methods to problems connected with the nature, extent and peculiarities of the market, together with the means for bringing the product to the market and distributing it there." Now, as market analysis constitutes the bulk of all business research, I propose to confine my remarks almost wholly to this phase of the subject.

Like most comprehensive definitions of great things, such as truth, poetry, style, religion, the above definition of market analysis is difficult to comprehend at the first glance, and one naturally seeks to find more vivid if less scientific definition, or rather, depiction. To me market analysis is both a searchlight and an X-ray to illustrate and diagnose every problem of marketing and distribution. It is the searchlight which illuminates the whole broad field, revealing the pitfalls, the snags, the snares and the culs-de-sac, and at the same time revealing the quickest and surest road to success. It is the X-ray because it goes below the surface of things, and exposes the lurking dangers and the signs of future disease, and to be conscious of these present dangers and future troubles is to be more than half-way towards effecting a cure of the one and prevention of the other.

Market analysis is the younger sister of modern, scientific production. Business research and market analysis do the same for marketing and business problems generally as the application of scientific methods have done, and are doing, so successfully in the factory and the workshop. Market analysis is an honest effort to make possible a more economical, efficient and equitable distribution of the product after it has left the manufacturer's hands. In short, to my hearers who are interested in production I would say that we whose work is market research are trying to make as scientific a job of the distribution of goods as you have made of the production of them.

I honestly believe that some of the greatest problems the business world has to face to-day are problems of distribution, and the great work of Business Research is the finding of solutions of these problems. There is something pitiful about the fact that only so long as the product is directly under the hands of the manufacturer it is something which is commensurate with the time, thought, energy and material expended on its manufacture, and that from the time it leaves his control until it reaches the hands of the consumer or user, it undergoes a complete change of value. Goods and products when they leave the factory and the workshop, the farm and the mine, the orchard and the fishing boat, seem to drop into a sheer abyss of expenditure and waste, and when they emerge again, into the hands of the consumer, they have lost nearly all semblance of their original value. The

question arises: what can be done to make distribution less costly?

The manufacturer applies scientific, efficient and economical methods to the buying of his raw materials, to his factory organisation, to his costings, to the production generally, but when he comes to face the problem of "putting his goods over" to the consumer he must often feel like a child, and a lost one at that. The advertising agent advises him how much to spend on advertising, but has he any idea whether it is too much or too little; or, for that matter, does the agent who advises him always know? The advertising agent tells him in what papers to advertise, but is either sure they are the best papers? The same agent prepares the advertisements which are going to interest the public in his goods, but is either manufacturer or advertising agent certain that the appeal is the best that can be made? The manufacturer is marketing his goods through certain channels, but is he always sure that he could not get better results by marketing through other channels? He is putting up his goods in a certain form, or in a certain container, but is he quite certain that a better form, or a better container, could not be found? Does he always know why his goods are not selling, or why they *are* selling? Can he always say with confidence that he is getting his fair share of the trade that is going, or, for that matter, can he say what his fair share should be? The aim and object of business research are to put all these matters, and many others, beyond a peradventure, beyond the shadow of a doubt; and in a few minutes I hope to prove by concrete examples that Business Research is actually doing this to-day.

What Market Analysis does, then, is to substitute for mere guesswork, facts collected at first hand and analysed, to substitute scientific methods for the rough and ready methods which only too often have attempted to guide distribution in the past, and to a great extent attempt to guide distribution to-day. More business failures have been due to ignorance of the market than, probably, to any other reason.

A knowledge of the market implies a knowledge of many things. It means a knowledge of present channels of distribution; possible new channels of distribution; distribution difficulties; types of sales organisation used; sales policies and methods used; dealer resistance and how it can be overcome; estimate of per capita consumption, and of class consumption. It means a knowledge of public taste and public resistance with regard to the class of goods under review; the kinds, the sizes, the shapes, the colours, the flavours, the consistencies, the smells, the containers, etc., that the public like and dislike. It means a knowledge of consumer tendencies; district characteristics; purchasing power of districts and classes; estimate of future consumption conditions; methods of advertising; volume of advertising; efficient selling angles; foreign and general competition; and so on. It means a knowledge of all these, and what Market Analysis does is to supply this knowledge.

So much for what Market Research sets itself to do; what

has it done ? What is it doing ? I propose to give you examples both from my own experience and the experience of others. At the International Advertising Convention, which was held at Wembley in July, I heard one of the leading advertising agents of America relate the following :—A firm was manufacturing a product which they advertised to be used for a certain purpose. Sales went fairly well and the Company was quite pleased with the progress it was making. After a time some one persuaded the firm to investigate the market to find out just how things were going generally. The investigation was made, and the chief fact that emerged from it was that a big proportion of the people who bought the product were actually using it for a different purpose from that for which it was advertised. Can you imagine anything more wasteful than to spend money on advertising a product to be used for a certain purpose, whereas people were, for the most part, buying it because they wanted it for another purpose ? It was seen how wasteful the advertising had been in this case, and when, profiting by the results of the research, they commenced to include this new use for the product in the advertisements, they found the sales bounding up. The same gentleman told us of another interesting case.

A firm was manufacturing a certain cleanser in the form of a hard cake or brick, and was quite satisfied that this was the best form in which to " put up " its cleanser. The agent who handled the advertising for this firm had found out by investigation that cleansers marketed in a powdered form in perforated canisters were very popular, and he set himself to persuade the firm he worked for to market its cleanser in this form. It took him some time to persuade the firm, but he succeeded at last, and the cleanser was put on the market in two forms—the old and the new. The result was an immediate increase in consumption. Not only did the sales of the powdered form in the perforated tin exceed all previous sales of the cake form, but an increased demand for the old form became evident as well.

To give an example from another source : A firm had been experimenting for some time with a new talcum powder which they intended putting on the market. The powder had passed all the laboratory tests and was just about to be launched on the market with a fanfare of advertising trumpets, when some one suggested that the public should have the final say in the matter of whether it was satisfactory or not. The suggestion was adopted, and investigators were put behind the counters of drug stores to dispense the talcum powder to likely customers and collect their opinions. It was soon discovered that all was not right with the powder. The perfume was unpleasant to my lady's nose, and other things were wrong. The talcum powder was taken to the laboratory again, and alterations were made in the light of the investigation, and again the public were asked to decide. This time the verdict was favourable. The talcum was launched on the market and met with the success it deserved. This example shows how a complete misfit was avoided by an investigation of the public taste.

Turning to examples from my own experience. Some little time ago a London advertising agent asked me to investigate the market for a certain product used by large drapers in the displaying of their goods. The product in which my client was interested was manufactured in England, but the Company had not prospered ; in fact, it had changed hands at least once, and the existing Company was not prospering. All the advertising had been done by beautifully prepared brochures, but as these were not selling the goods it was decided to start advertising in the trade press. On investigating the market, we found that even though this Company were to spend £20,000 on advertising its product, it would not succeed in selling it. There were several reasons for this, the chief being that the British made product could not compete either in artistic design or in workmanlike finish with a similar product made in France. It is true that the British product was lower in price than the French, but the big West-End drapers did not mind what they paid (within reason), provided the design pleased them. What this investigation revealed, then, was that it was not more advertising, or different advertising, which was needed to sell this product, but a fundamental alteration in the product itself.

Another example from my own experience concerns a firm abroad which was planning to market a certain class of rubber goods in Great Britain. This firm asked us to investigate the market, and we were given a free hand as to methods. Our plan of campaign was :—

1. To find out the industries—and the numbers of firms engaged in them—in Great Britain actually using this class of goods, and

2. To find out the industries—and the numbers of firms engaged in them—not at present using the goods, but which might be induced to use them (i.e., the potential market).

To procure this information a technical knowledge of the workings of many different industries was necessary. In all, over fifty different industries were included in these two lists, with the numbers of firms engaged in each.

3. To interview representative members of the above groups (management and workers) with the object of getting views, experiences and prejudices bearing on the goods in question.

4. To get some idea of what competition existed. With this in view, catalogues, samples and price lists had to be procured. Information was also necessary regarding what competitors were planning for the future.

5. To find out what had been done to advertise the goods in this country.

As it was proposed to market the article direct we had not to worry about the middleman.

The findings were :—

1. That the existing market could be greatly extended, provided efficient propaganda was adopted.

2. That the potential market was much larger than the existing market.

3. That due to insufficient care on the part of the users the life of the goods was unnecessarily shortened.

4. That as the use of the goods was not compulsory, many firms had not introduced them into their works.

5. That a substitute was used by some firms.

6. That certain firms in this country were producing a good range and quality of the goods.

7. That our client had the advantage of quality for price, and that his country had a name for the quality of these goods.

8. That the market was being damaged by cheap, inferior stuff sold by certain merchants.

9. That no intensive effort had been made to advertise the goods in this country.

10. That a firm in this country was testing an improved variety of the goods in question.

To take an investigation of another kind:—A London advertising agent was doing the publicity for a certain, well-known branded beverage, and his campaign was to advertise in district after district until the whole of the British Isles was covered. One of the districts he had in mind was Bradford, but for some reason, then unknown, this beverage had never sold in Bradford. Before launching this campaign the agent commissioned my organisation to find out the reasons why the beverage was not selling. My local investigator interviewed wholesale and retail wine merchants, public houses, chemists, working men's clubs, and the general public. Now the reason why this drink did not sell in Bradford was a very simple one. The people in that part of Yorkshire made their own. My investigator collected a large number of recipes for the making of this drink, recipes which had come down from mother to daughter. The people in this district actually matured this beverage in their stone cellars for ten years, so that many of them had ten years' stock in hand, and, naturally, they were not, under these circumstances, going to buy a manufactured brand, no matter how well it was advertised. In short, there was practically no opening in Bradford and district for the brand in which my client was interested. This is an interesting example of the use to which Business Research is being put to-day. A few years ago this is what would have happened. An advertising man, having made up his mind to advertise the drink in Bradford, would have proceeded to do so without investigating the field, and his client's money would have been wasted; but to-day the agent investigates the field, and as a result of the investigation decides *not* to advertise at all, thus saving his client unnecessary expenditure.

I would have liked to have given you more examples from my own experience of what Business Research has done, but time will not permit. I will rest content with giving you the names of a few of the products for which my organisation has

investigated the market during the last few months. My object in giving you this list is to show how varied the problems are. The products over and above those I have already referred to are :—two different soaps ; macaroni ; ice-cream freezers ; a gramophone ; motor oil ; cold cream ; two different drinks ; a cigarette ; a tobacco ; table jellies ; two different tooth brushes ; a fountain pen ; a hair net ; a manicure set ; anthracite coal ; soda fountains ; gas boilers.

How and from where are the data procured by the research expert upon which he bases his reports ? The data sources which provide the material from which analyses are made can be roughly divided into libraries and the general public, and by the general public I mean wholesale and retail dealers of every kind, experts of many kinds, and the general consumer and user. All kinds of libraries may prove useful, public libraries, special libraries—Associations' libraries, works' libraries—Government offices, shipping and railway companies' offices, etc. The libraries we frequent most are the British Museum Library, the Patent Office Library, and the Science Library at South Kensington. The data we seek in libraries are the population per square mile of the territory under review, how many of this sex or of that, of this age or of that, of this trade or profession or of that, of this class or of that. We seek to find the wealth per head of the population, and the rateable value of various territories ; the railway mileage ; the number of legitimate retailers of certain products ; the chief industries with their history, present position and future prospects ; district peculiarities and characteristics ; proximity of large towns ; undeveloped territories ; undeveloped natural resources ; and so on. We also use libraries for technical data—building, engineering, electrical, chemical, textiles, etc., and for patents, all of which data is collected by searchers acquainted with technical matters. We also go to libraries for information about foreign countries.

Data the Business researcher procures from the public are, among others :—competition ; public taste ; class distribution ; dealer resistance ; peak period of sales ; all about containers ; window displays ; advertising and a great many other matters. I would say here that every investigation presents its own peculiar problems which we seek from the public.

Information is procured from the public by letters, by questionnaire, or by personal interview. Far and away the best method is by interview, with or without questionnaire. Getting information by letter is pretty hopeless in this country.

That concludes a general survey of Business Research, what it is, what it does, what it has done, and how it is done. I would like, now, to lay down a few dicta.

Never commence to manufacture a new product without first investigating the market.

Never commence to manufacture a brand of a product already on the market without first investigating the market.

Never allow your sales to go down without investigating the market to find the reasons.

Never let more than a year pass without investigating the market.

Never employ anyone to handle such a vital thing as your advertising who is not prepared to give you market research as part of his service.

See that your sales managers know something about Market Research.

In concluding this paper I would like, very earnestly, to voice a plea to big businesses, associations, societies, federations, guilds and corporate bodies generally, connected with making and selling, to undertake, or finance, Business Research. There is a crying need in this country for basic investigations. By basic investigations I mean investigations into the industry generally (any and every industry); investigations into the merchandising of the product generally. The investigations which are being done in this country to-day have to do with special brands, proprietary goods and special problems, but little is being done in the more fundamental researches, and yet they are the more vital; for it is only in the light of the fundamental researches that the smaller and more personal investigations can be made with the greatest profit. If every trade association in this country were to investigate its own industry and the merchandising of its own product, the whole field would soon be covered. I believe that much of this kind of work has been done in America by associations. It is true that many of our Associations are not equipped to handle this kind of work themselves, but it would be sufficient if they fathered it and financed it. The actual research machinery could soon be created, if it does not already exist. The actual cost of these investigations would be small; the benefit to every member and to the industries generally would be incalculable.

FOURTH SESSION— *Chairman:*
J. G. PEARCE, Esq., B.Sc. (Eng.).

THE POLICY OF THE CARNEGIE UNITED KINGDOM TRUSTEES IN REGARD TO SPECIAL LIBRARIES.

Summarised Report of an Address by Lt.-Col. J. M. MITCHELL, O.B.E., M.C., M.A., Secretary, The Carnegie United Kingdom Trust.

Colonel Mitchell warmly congratulated the organisers upon the plan of, and the arrangements for, the Conference. It had already brought a flood of light upon a most important section of the Library world which to himself and many others had been comparatively unknown. Thanks to the high level of the papers and the discussions, the members of the Conference were in possession of data which afforded the basis for a much-needed expert enquiry. It was manifestly desirable that a select committee should be appointed to conduct this enquiry and to report to the Conference at a date to be arranged. The importance of this report was greatly enhanced, and its urgency emphasised, by the approaching first session of the new Departmental Committee on Libraries appointed by the President of the Board of Education.

The position of the Carnegie Trustees was one of great delicacy. They had among them men and women of eminent qualifications, but the scope of the Trust was so wide, and the applications for help so varied, that they could not claim to be expert in all their work. Yet they could not consent to make grants blindly without a deliberately conceived policy of their own. In the single sphere of library provision—one among many which engaged their close attention—the proposals submitted to them came from institutions so varied as National Libraries, Public Libraries of all other grades, University and College Libraries, Specialist and Technical Libraries, and so on, down to the smallest of village clubs and institutes.

In brief, they had taken as their general function, the task of helping to make these manifold sources of knowledge accessible to the widest possible public, so that neither distance nor lack of means might rob the community of a potential expert in any branch of legitimate activity.

Colonel Mitchell drew special attention in this connexion to the function of the Central Library for Students (Galen Place, Bury Street, Bloomsbury, W.C.). This institution was now an established part of library provision, though much had still to be done before it was thoroughly equipped for its important function. This function was to act as a national loan Library of serious literature, in reserve to all public libraries, and particularly, of course, to the new County Libraries (77 in number*), and the poorer municipal libraries of small towns and districts. Ratepayers in many small boroughs paid as high a rate per £ for their libraries as—often an even higher rate than—residents in large towns, but naturally their book service was definitely inferior owing to

* 83 in October, 1924.

the low rateable assessment and the weight of overhead costs. It was clearly right—indeed essential—that libraries in these places should be able to obtain on loan the books required for serious readers. However successful might be the development of Specialist Libraries and the technological Sections of Public Libraries, the needs of scattered and isolated students in small towns and villages must aways be supplied on the postal system. Fixed local collections—even the national copyright libraries—should have their lending departments, so that the chances of distant students might to some extent be equalized with those of dwellers in their immediate neighbourhoods. Finally, the obvious need for Specialist Libraries must not blind the scientific and technical expert to the service which could now be rendered by the Public Library. Mr. Jast was to speak of the new developments which had already been possible under this head since Public Libraries had been relieved of the 1d. rate limitation by the Acts of 1918-1920. It was the duty of the scientific world to help, and indeed to stimulate, Public Library Committees to make use of their new freedom. Libraries and Library Committees would surely respond with alacrity to overtures of this kind, and it might even in many towns be practicable to aid Public Libraries in setting up special local collections important to industrial firms by means of grants from Chambers of Commerce, Rotary Clubs, etc., supplementing the sums derived from rates. In many places this might be the more economical policy.

Concluding, Colonel Mitchell suggested that it seemed highly desirable that every librarian of a Specialist Library should join the Library Association. Admitting the need for both services, real success depended upon mutual understanding and carefully thought-out co-operation.

THE SERVICE OF PUBLIC LIBRARIES IN THE SPECIAL LIBRARIES FIELD.

Summary of an Address by

L. Stanley Jast.

Chief Librarian, Manchester Public Libraries.

All that I have to say with regard to the remarks of Lieut.-Col. Mitchell is that no city has been more self-supporting than Manchester in the matter of public libraries. I should also like to give my entire assent to his observations on the important question of pooling as far as we can the library resources of the country. But as regards special libraries we have to remember that a special library can never cover its field. We know that, in the strict sense, there are no special fields. There are certain fields which we mark out conventionally and we can gather together a number of books, and we can draw a ring round them. But we can never say that all the books within that ring are, for example, engineering, and all the books outside of it are not. That convention is of the same nature as that of the dictionary maker. Nobody can draw a ring round the English language and say that every word within that ring is English, and every word outside is foreign. The special worker, however complete his library may be in itself, must inevitably have to make research, and to make consultations which are outside his special field, but which concern matters within that special field, and it appears to me that he has to come to the well-stocked general library, and in many cases the general library must be the municipal library, and and that is, as far as I know, what is actually happening.

There are several special libraries and works libraries at Manchester to whom we have on occasion lent books. We have even departed from our rule not to allow books to go out of the building in order to oblige these libraries. They have not done anything in return at the moment, but I am looking forward to development in that direction. It appears to me to be the obvious relationship between the two classes of libraries. You want the special library and you want the general collection, and what one may term the general special library is, other things being equal, more useful when it is in physical association with a great general library, than it would be if it were isolated from it.

Now with regard to what has been done in the direction of special libraries by public libraries—there has not been very much done. The principle move has been in the direction of the Commercial Library. There are commercial libraries which are very largely special libraries, even in your limited sense. Commercial libraries have been established at Liverpool, Glasgow, Bradford, and at Leeds and Manchester. I mean libraries according to the proper definition, the one I should suggest—that is to say, they are not merely collections of books in a specific field, but collections of such books with a special staff. To a certain extent they do in a limited way a good deal of the kind of work that the special library in your

sense is doing. The libraries differ in the degree of their specialisation. At Leeds it is a mixture of commercial books and technical books. At Glasgow they associate the Patents with the Commercial Library. At Manchester more than in any other of the commercial libraries so far as I know, it is bedrock commercial, it admits nothing that is not going to be immediately useful to the business man. There are no economics there. If you want economics you have to go to the Reference Library. It has been very successful. The specialisation to the bedrock commercial books has justified itself. It enables the staff to become expert in that particular field.

The next development has been in connection with the departmentalised Technical Library. The only departmentalised Technical Library is that of Manchester, but Birmingham has decided to form a similar library—I am not aware that it is actually opened*—and there is no doubt whatever that in all the big business and technical centres the technical library will become a necessary adjunct of the municipal library. It is the complement of the commercial library.

Mr. Jast then went on to describe the vertical files of press clippings at the commercial and technical libraries at Manchester, and showed examples of the folders. He also showed the cataloguing methods as applied to the clippings, and trade catalogues, and said that one of the special features at Manchester was that all material, whether in the form of clippings, or pamphlets was dealt with in one catalogue and one form of index, so that the same number referred to all material, irrespective of form. They used the Decimal classification, with additions and modifications. Material of temporary value they classified, but covered by one card for each topic, not for each title. So in the clippings, the folder was catalogued, not the individual clippings. This saved an enormous amount of time, and served the purpose quite well. In his opinion there was a great amount of uneconomic indexing in many research libraries. A thing might be worth keeping, in which case it was certainly worth classifying, but it was not necessarily worth indexing.

* The Technical Library at Birmingham was opened to the public, 1st Dec., 1924. [*Ed.*]

THE PLACE OF TECHNICAL INSTRUCTION IN SCIENTIFIC AND INDUSTRIAL ADVANCEMENT.

Summary of a Paper by Lt.-Col. E. L. Johnson, L. ès. Sc., F.G.S., Director, Cleveland Scientific and Technical Institution.

The Cleveland Scientific and Technical Institution, Middlesbrough, is really the embodiment of a scheme advanced many years ago by the late Dr. J. E. Stead, but which has only materialised since the war. This Institution has three main functions, although a fourth was originally intended.

The first object was to create a common meeting-place for all the various technical bodies, of which there are a good number in the locality. Hitherto these societies had been watertight compartments, taking little or no cognisance of other technical bodies. A great deal of mutual assistance and benefit is to be gained by interchange of ideas, and the results of this branch of the Institution's activities have exceeded even the most sanguine expectations.

The second object falls well within the scope of this Conference, and was the formation and maintenance of a special library which could be immediately made available to our local industries and research workers. In one respect we differ from most other research institutions, inasmuch as we do not cater for one individual industry but for the whole industries of a district. We are a considerable distance from London, and must have our own special library on the spot. It is hopeless to depend upon libraries at a distance, and we could not reasonably expect public libraries, except perhaps in very special cases, to cater for us.

The third object in view was assistance to industry by the provision of laboratories where a certain amount of research and also, to some extent, lesser routine work could be carried out. Unfortunately from a trade point of view, we have fallen on evil times, and until such time as industry can maintain such laboratories, the idea cannot be carried out, although evidence is not lacking that such facilities would be appreciated and used.

The fourth and last object—the Technical Intelligence Service—can be taken to consist of two distinct functions :—

(a). The obtaining and compiling of specific technical information. Articles are sought for and translated; bibliographies are compiled, and précis made of long serial experiments. Statistics are tabulated, and patents sought for—in short, any service required by a research worker when undertaking a new piece of research work or reviewing a situation, is carried out.

(b). The dissemination of scientific information. This again is a branch which particularly interests this Conference, and is carried out by means of abstracting. We abstract and publish monthly articles which have appeared during the course of the month. We meet with many difficulties because we have to cater for two classes of people. We cater not only for the research worker but also for the engineer in charge of plant in the various works, and naturally their views are not quite the same.

A good deal of the information is, of course, in foreign languages, and a good deal of it is fairly lengthy, and no engineer looking after his job in the daytime can find time to go through it. The abstracts must be more than mere references—they must contain the gist of that article, otherwise they fail. The next question is how to file them. We decided to print them on one side of the paper. Furthermore we cut them to the size of the 5" by 3" index cards to facilitate filing for the person who receives them. All he has to do is to paste on an index card and place in a cabinet, the title having been previously indexed for him, such as :— STEEL: BULK-DESULPHURISATION OF.

A reference was made last evening to the dates on the technical publications and the date they come out. We publish our Bulletin monthly, and aim to get to press on the 28th of the month so that it can appear on the 3rd or 4th of the following month. This, when the staff is very small, is not always possible, but the significance of regularity cannot be too highly emphasised.

The question of abstracting presents another further difficulty. The editor of every trade paper knows his job better than we do. His great object, perhaps, is to create as big a circulation as he can, and he has to please his readers. Naturally only a very small percentage of them are highly technical men, and therefore you can only hope to find a certain amount of technical work in papers. Someone has to pick the wheat from the tares, and I contend, as I did last evening, that it does require a highly technical staff to do it. It cannot be left to entirely clerical assistants.

The Institution is maintained by generous donations from the local industries, and our services are rendered free to all enquirers. We have done a good deal of work which has been appreciated, but if we have a difficulty it would be that we are not sufficiently well known or sufficiently used.

In connection with institutions, or departments of works such as those falling within this category, there is a tendency to make them " show-departments," but the guiding principle, if we wish to maintain our already high place, must be to see that we render real guidance and assistance to science, industry and commerce, and that when that assistance is called for we are not " found wanting."

* * *

Mr. F. K. Neath : The various opinions expressed on the functions of a special library would indicate that a special library should act as a clearing house for information as it is published, or information as it has already been published. A Research Library thus supplies information to research workers and technical executives. Such a special library cannot act efficiently if it is hampered with a large collection of books, and numerous files of periodicals. What a special library really should do is to inform enquirers where they can get the information, rather than supply it. All literature is examined critically as it is published, and indexed in some way, and indexes and abstract journals are filed in preference to the periodicals themselves.

In every special branch of industry there are a few journals and society proceedings which deal with that particular industry, and complete files of these should be kept for at least periods of five to ten years. The necessity for co-operation with the general libraries becomes very urgent as it is upon these libraries that the special library relies for the bulk of its references.

In Birmingham, the Cast Iron Research Association Library co-operates

with another special library, that of the Non-Ferrous Research Association, which, although dealing with another branch of metallurgy, has a great deal of connection with the ferrous side in respect to the published literature. There is also the Patents and Commercial Library, the Public Reference Library, and the Technical School Library, all of which contain a large number of books and references which a special library cannot afford to purchase or accommodate. The Cleveland Technical Institute also co-operates very generously in the matter of abstracts and translations.

The necessity of specialisation is shown in that the Research Association Library only deals with the technical side of the industry, and should it wish to take into consideration the economical developments, it would be necessary to employ a specialist in that branch. This is the essence of a special library, namely, specialisation, and the necessity for co-peration between special libraries themselves is thus manifest It is also very necessary to have trained librarianship in special libraries, as the training of the average research worker does not attach enough importance to the value of published information, and the necessity for keeping that information in a systematic and get-atable condition.

ELECTION OF THE STANDING COMMITTEE.

Following the discussion on papers read during the Fourth Session Mr. J. G. PEARCE said :—

I think we very cordially agree with Colonel Mitchell that we should do everything possible to join up and co-operate with the Library Association. We have no intention of forming a new society with a set of officers, but I venture to suggest that we try and achieve the object with rather less expenditure of time and money than that would involve.

I suggest that this Conference forms a Standing Committee, elected by the Conference this evening, with power to discuss these matters of co-operation with the Library Association, to carry on any negotiations with that body, with power to add to its members, and also the power to call another Conference or meeting at some future date to be decided by the committee, and to report to that Conference. It seems to me that that proposal would ensure the continuity that so many of us feel would be desirable, so that the energy and the enthusiasm which led to this Conference should not be dissipated and produce no definite result.

This proposal was carried unanimously, and the following Committee was appointed :—

‖Mr. E. W. Hulme.	Col. E. L. Johnson.
Dr. J. C. Withers.	Mr. H. Vincent Garrett.
Mr. Sinclair Wood.	Mr. J. G. Pearce.
Mr. P. Cohen.	Dr. R. S. Hutton.
†Mr. W. Barbour.	Mr. A. F. Ridley.
†Miss L. Stubbs.	Miss A. L. Lawrence.

‡A nominee of Sir Robert Hadfield.

§A nominee of the Universities Bureau of the British Empire.

*A representative of the trade and technical press (either Sir Richard Gregory or Mr. Leon Gaster).

† Mr. W. Barbour later resigned in favour of Mr. L. Honeyburn.
†Miss L. Stubbs later resigned in favour of Mr. S. J. Nightingale.
‡ Sir Robert Hadfield nominated Mr. G. B. Willey.
§ The Universities Bureau nominated Mr. W. H. Dawson.
* Sir Richard Gregory and Mr. Leon Gaster both agreed to serve.
‖ Mr. E. W. Hulme, retired April 7th, 1925.

NOTE : A list of Members of the STANDING COMMITTEE and its EXECUTIVE, as at April 7th, 1925, appears on p: 3. [Ed.]

FIFTH SESSION—

Chairman:
B. M. HEADICAR, Esq. F.I.A.

ABSTRACTING FOR THE SCIENTIFIC WORKER.

By Dr. J. C. WITHERS,
British Cotton Industry Research Association.

In the writer's experience, the abstracting of scientific and technical literature must differ in method according as it caters for the general reader or for the specialist in a particular subject. Abstracts of the former type are provided throughout the world by various scientific societies; in the English language some branches are well done, notably chemistry, and others indifferently supplied, as for example physics and physiology. The second type of service is performed by several Research Associations and in many large works.

Among the abstracting agencies in England, the Chemical Society has probably the best organisation for reviewing the literature in a systematic way. Each abstractor is instructed first to read the whole report before him so as to form a judgment of its importance and the scale on which an abstract should be made, and then to express in his own words the substance of the paper. It is understood that each new chemical compound described shall at least be mentioned in the abstract and printed in italics, so as to facilitate the compilation of a complete lexicon of substances. Furthermore, the abstract is supposed to reflect the author's views, impartially. To the writer, this is an important point. The weakness of physiological abstracts in the English language is that they are too frequently biassed. It may be interesting to know the opinion of some abstractors about the papers they review (" W.D.H.," for example), but in journals catering for all readers the first consideration should be " what has the author done and what are his conclusions."

A good index to the value of an abstracting journal to the scientific worker is the number of different periodicals it regularly reviews, particularly of those which are not readily accessible. It is on this score that the writer ventures to criticise "*Science Abstracts*," the most important journal in English covering the literature of physics and engineering. Really, it passes under review very few journals which are not to be found in every University or large reference library, readily accessible to the majority of research physicists or engineers. On the grounds of wider range of journals abstracted, it must also be confessed that the United States offers a more efficient service of chemical abstracts than England.

A common weakness of abstracting journals is the tendency to abstract *periodicals* rather than *subjects*, which has at least two unfortunate results. Firstly, a paper is apt to be judged according to the periodical in which it appears and an abstracting journal catering for " pure " science would regard it favourably if published in an " academic " journal but not if written in a " technical " magazine. Textile science suffers particularly in this respect; results are being published continually which throw considerable light on such general problems as elastic imperfection,

the flow of viscous liquids, the moisture relations of colloids and theories of absorption, and hints of questions awaiting solution by mathematical physicists, statisticians and others are frequently given, but because most of this new knowledge appears in Textile journals it is not regarded as " pure " enough to be abstracted for academic chemists and physicists. The second result follows from the first; our abstracting journals give an incomplete review of subjects. For example, a paper on the spectrophotometric testing of dyes in association with textile fibres appeared, a few months ago, in "*Zeitschrift für Physik*," and was duly abstracted in "*Science Abstracts*" Had it been published where it would quite legitimately have been at home, namely in a scientific journal devoted to textiles or dyeing, it would almost certainly have been ignored, as other photometric studies of dyed fibres have been. It seems to the writer, therefore, that the managers of our abstracting journals should widen their horizons and in addition to covering definite lists of periodicals should be prepared to receive notes on suitable subjects from any source. Not long ago, a systematic search was made under the writer's direction for data on the physical properties of cotton. The only figure for a coefficient of friction was found buried in a textile engineering journal in an article on the process known as " carding." Though the article as a whole might be unsuitable, it is surely right to say that an abstracting journal for physics should have found a place for the data contained in the paper on the coefficients of friction. To guard against the possible disappearance of scientific facts, therefore, the writer visualises a scheme by which those engaged in special library work such as that described below, will supply abstracts on subjects from the adventitious sources of information at their disposal to the appropriate abstracting journals, and be encouraged so to do. Unfortunately, in the writer's experience, such co-operation is not yet welcomed by some of our abstracting agencies.

Turning now to the question of providing abstracts for the worker in a particular field, some explanation is necessary of why a special service has been organised in many of our large research institutions to-day. In the first place then, however much care the author of a paper may exercise in making the title as specific as possible or in providing an abstract, he cannot be expected to foresee how his paper may appeal to specialists, and these must in the last resort be prepared to explore the whole paper for themselves. For an example, an excellent Italian paper " On Specific Heats " was only important from the present writer's point of view because hidden away in a column of figures were some data on cotton, whilst an American article on unglazed porcelain was interesting because it gave a hint of a method for determining pore space in porous material which might conceivably be applied to cotton. In the former example, it was the information on a *material* which was preserved, in the latter the hint of a *process*, illustrating the fact that the abstractor for specialists will be governed in the choice of his information by an exact knowledge of the materials and processes in which the special worker is interested.

At the British Cotton Industry Research Association, provision for the acquisition of this knowledge is secured to the Head of the Information Bureau (the writer) by making him a member of the " Round Table " of departmental leaders. The complete programme of research is known to all the members of this meeting and at their conferences, when progress in each department is discussed in rotation, it is possible to form a sound judgment of the type of information which throws light on their problems. In this way assistance is often brought to the research worker from what would otherwise be neglected sources. For instance, it could scarcely be expected that a botanist should systematically read the Austrian " *Monatshefte für Chemie,*" nor that a general abstracting agency for botanists would take an interest in a paper published in that journal on eutectic mixtures of terpene derivatives and polyhydric phenols. Yet this paper was of direct value to the botanist in search of mounting media of convenient melting point and high refractive index, the need for which in the case of the cotton hair was well known to the writer.

In the Cotton Industry Research Association's Library, about 130 periodicals are received regularly, including the standard academic journals for Botany, Chemistry, Physical Chemistry, and Physics, as well as Textile and Engineering papers. These are first scanned by the writer for suitable information and then passed to abstractors. Including the Patents, the number of separate abstracts made amounts to about ten a day. The bulk of the work is done by one woman graduate chemist, but the writer has the option of impressing the services of any one of the forty-odd, graduate research workers for papers which offer any special difficulties. Each paper abstracted is lightly marked in the periodical and these are then placed on the reading tables in the library. It is an instruction to all workers in the laboratories that they are not absolved from the duty of reading such periodicals as appeal to them and that if they find articles not marked as having been abstracted which were worthy of notice, they should at once point out the omission.

The abstracts are edited by the writer, grouped into classes and then duplicated by a typist with the help of a rotary cyclostyle, some 160 copies being made. About every ten days a number of the " Summary of Current Literature " is issued, containing at least 100 abstracts and a list of additions to the library and museum. The Summary is supplied to each graduate research worker at the Institute, to several large firms with separate research laboratories, to such organisations as the Textile Institute, the Empire Cotton Growing Corporation, and the Indian Central Cotton Committee, and also to many large public libraries, both in Manchester and London. [Specimens of the " Summary " were exhibited at the Conference.]

The abstracts are finally indexed under the headings of (a) authors, (b) concretes, using guide cards on the " Kaiser " system, and (c) processes. In the long run, the writer finds the

last index to be the most useful. Each abstract is carefully scrutinised and indexed under the name of every process relevant to cotton research and the industry upon which it throws light. In this way it is possible to produce at short notice a review of all the important papers bearing on, say, cotton cultivation, bleaching or dyeing, or the testing of cotton materials, which have appeared since 1921, when the work began. Before embarking on specific researches in the laboratories reviews of the available literature bearing on the problem are first prepared in the Information Bureau. Reviews already published include those on the chemical constituents and physical properties of cotton, the swelling of cotton by chemical agents, mildewing, mercerisation, and so forth, covering as many as 200 references in some instances. In this way, therefore, the work prior to 1921 is also brought within the bounds of the central card index.

NOTES ON THE NEED FOR AND ORGANIZATION OF AN INDEX OF TECHNICAL AND SCIENTIFIC LITERATURE.*

By H. Rottenburg, M.A., Engineering Laboratory, Cambridge University.

The following notes are presented to the Conference more with the idea that they may help as a starting point for discussion than in the belief that they contain any original matter.

In every crisis whether in the life of the individual, the family, the township or the nation, man turns for help to knowledge acquired in the past. The crisis may be a serious emergency or merely a sudden determination to increase knowledge by research.

In trying to find that piece of knowledge which will help him in the crisis man turns first to knowledge stored in his own or his friends' memory ; then to written knowledge of which he or his friends know, and lastly to some index to direct him to other sources of written knowledge.

The probability, therefore, of his surmounting the crisis successfully through the use of previously acquired knowledge will depend in no small measure on the efficiency of the index he consults.

Two cases are worth mentioning here. During the late war we imagined that the Germans would be entirely stopped making glycerine through their failure to get fats, yet they were using a process for making it out of sugar which process was originally described by an Englishman and developed by them.

Also it has been discovered that a large amount of the later mathematics of the aeroplane were published in Russia before the war.

Either of these facts could have been discovered from an exhaustive index. It is in fact not too much to say that in another crisis such as the Great War a really efficient and exhaustive index might be the means of determining whether we got through it successfully or not.

It may be urged that the scheme is enormous. The answer to that is that a great deal is already being done and perhaps in the aggregate actually more when all the present overlapping is considered. Also the results arising out of such an index may be even more enormous.

It is said sometimes too that we already have a number of indexes. The answer to this is that they are none of them exhaustive and none as efficient as they should be.

SCOPE. A really efficient indexing bureau would (a) collect all references to articles in the technical and scientific press which are of any value and (b) distribute complete sets of copies on cards or slips to several public reference centres and (c) supply works,

* In the absence of Mr. Rottenburg, his paper was presented by the Hon. Secretary.

societies, colleges, etc., with sectional references, i.e., covering certain branches of knowledge. It would also (d) supply on request and for a fee, bibliographies on any subject.

METHOD OF STARTING SUCH A BUREAU.

A committee might be formed which would begin by collecting information about all the existing indexes however small. The next step might be to persuade all the bodies interested in such indexes to agree to a federated system under which they would agree to pool their work. They would then send in to the central bureau each week or month their references, where they would be filed and also sent out to the various centres. It might be found that a considerable amount of overlapping could then be eliminated and the cost of new work largely paid for by this saving.

The control of such a bureau would naturally be a joint one under the various bodies at present interested in indexing.

METHOD OF PRINTING THE INDEX.

Of all the methods investigated, the one which seemed to promise best was to make use of the machinery made by the Addressograph Co.* Using their apparatus, each reference is embossed on a zinc plate. This plate is then used for printing the index cards or slips from and is then filed away and used later for printing bibliographies from.

The references would probably be received together with a ist of the headings and sub-headings under which the reference was to be filed. A great deal of work would later be saved if periodicals arranged that all their contributors made out references and lists of filing headings of their own contributions.

It would be a great benefit to users if each reference gave clearly the type of article, so as to save unnecessary looking up. For this purpose it would be an advantage, especially as the room for subject matter on the plates is limited, if a set of abbreviations were standardized such as Hist=Historical ; Theo=Theoretical discussion ; Descr=Descriptive, etc.

Besides the subject matter of the reference each plate might have a plate number under which the plate would be filed. This plate number might conveniently be made up of two numbers, the first being a number to denote the periodical in which the article appeared, and the second number the consecutive number of the reference in that periodical. When later a request for a bibliography was received, all that would be done would be that an expert indexer would go over the card index and make a list of the plate numbers of the references which were required for the bibliography. The subsequent work of collecting these plates and passing them through a printing machine would be a matter for a boy to do.

It would greatly increase the value of such an index if all scientific books were indexed in it.

* The practical working of Mr. Rottenburg's system by means of the Addressograph machine was demonstrated during the Conference.

The actual divisions into which the index was divided would need very careful consideration but as soon as that was settled it would be most important to have a guide to the index published.

A useful adjunct to the system I have outlined would be the compilation of a set of plates giving brief biographical details of scientific and technical writers—a sort of *Authors' Who's Who*—which would prove of assistance in judging the value of papers.

* * *

Col. Johnson : The question has been raised as to whether a good well-trained man should devote his time to making abstracts, or whether it would be better to employ cheap labour. I should most certainly say put the highest paid man, and the man whose opinion is well worth consideration on the proposition in hand.

Mr. Turner : I should like to take very much the same point of view. I want information ,as it happens, on rather specialised subjects. I find the greatest difficulty in getting it. It falls to my task to abstract it, and I am inclined to say that before anyone can pretend to abstract a given document he must know the subject quite as well as the man who originally wrote it. In order to be really useful to a research worker the abstract must be written by a man who knows as much as a research worker ; otherwise he does not know what is wanted. If the writer of an article makes the abstract he would simply do it from his own point of view. If there are one hundred different branches of science you should have one hundred different abstracts of the same article. In deciding what to abstract there is enormous difficulty, and the ground is so wide.

Mr. Barbour : I agree with the last speaker. Every abstract must be read from the point of view of the Association. The abstract by the author is valuable for science record purposes, but is not valuable to the many specialists who utilise the information.

There is a point which I should like to raise. That is the scope of the bureau of information. Is it to supply the actual information, or is it to direct enquiries to libraries where the information exists ? I tnink the directive system is a practical proposition, and an office not necessarily occupying a new building, but an office in the library of some other librarian, might serve the purpose of directing enquiries. Such offices scattered up and down the country at proper centres would serve a very useful purpose.

"THE SUBJECT INDEX TO PERIODICALS." *

By E. Wyndham Hulme,
Formerly Librarian, H.M. Patent Office.

With regard to the Subject Index, I do not propose to deal very largely either with the history or with its nature. I shall rather deal with the potentialities of the index, and of similar organisations with a view to showing you how readily they could be extended. The Index has been issued in the form of eight class lists, starting with Theology and ending with Technology, and these have been published annually except for the years 1917–1919.

Our index is a classification. This duplication of index entries is very largely unnecessary. We have a principal entry, and where reference is required we make it, but practically our index is a classification under alphabetical headings of selected articles—selected because we consider that they contain some valuable reference. There is a very large proportion of matter in the magazines that we discard entirely.

The periodicals we get are sent to us gratis. There is not much difficulty in obtaining them, but we do not receive anything like 600. We possess only a small proportion of that number but we have not taken very great trouble in making the loan library complete, partly because we are housed in the National Library of Wales, and it is very often unnecessary to duplicate, but there is a loan library, and any subscriber to the Index can on application obtain the loan of specified articles on the payment of return postage, in fact whether you are a subscriber or not we should be pleased to furnish them.

The Index is a classification of articles of reference value selected from an examination of close upon 600 periodicals, English and foreign. The entries are minutely classified under the Alphabetical Subject Headings of the Library of Congress, and are annotated where it is desirable to define with greater precision the scope of articles. The unbound numbers of periodicals sent for indexing are filed for reference and lending purposes. Any subscriber to the Index can on application obtain the loan of specified articles on payment of the return postage. Further he can require the Editors to furnish him with a list of articles under specified headings in continuation of the last printed Class-List.

Thus subscription to the Index on the part of a small rural or town library raises the status of that Library to that of a research institution, for the Index places its readers in touch with the latest developments in thought, policy, and action in all departments of human life, while it maintains a Library of serials for reference which is not only larger than the corresponding

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* Issued by the Library Association, 1915, etc. Annual Subscription £4. 4 0. Agents: Grafton & Co., 51, Great Russell Street, W.C.1.

This publication has been issued annually in the form of Class Lists. For full description see page 104.

collections in the average Municipal Reference Library, but probably contains serials not to be found in the great Library of the British Museum itself.

This work of the Library Association could not have been carried out without some external assistance. Generous pecuniary assistance has been forthcoming from the Carnegie United Kingdom Trust, while free quarters have been found for the Editorial Staff of the Index and its nucleus loan collection in the great National Library of Wales at Aberystwyth.

It should be noticed that "The Subject Index to Periodicals" was planned at a time when "The International Catalogue of Scientific Literature" was still in existence. Hence the Index to a great extent bridges the gaps which that publication left unfilled. With the discontinuance of "The International Catalogue," however, the question of the co-ordinated publication of indexes to periodical literature once more comes to the front. It may be taken for granted that international co-operation has failed, and that the future organisation of the indexing of scientific and periodical literature must be effected on a national basis.

Secondly it should be remembered that the State has a well defined interest in this matter and should be called upon to shoulder its share of responsibility. For instance the principal repositories of the serial literature of Art, Education, Science, and Technology are to be found in the State Collections. In the case of many foreign serials the only accessible copies are filed in these libraries, and naturally their curators possess the requisite qualifications for dealing with the highly specialised class of literature which they control.

Co-ordination in indexing implies the acceptance of a common scheme of classification and headings, an agreed form of index entry, and a central distributing agency. Further, the financial prospects of success under such a scheme are materially improved if the Indexes produced are uniform in format and style and are published by a single agency. These conditions being granted the actual indexing can be carried out in any home or library.

The economy of co-ordination is quite sufficiently realised by those interested in abstracting and indexing. It rests ultimately upon the fact that a large proportion of Academic, Society, and other periodical publications consists of highly heterogeneous matter. For instance the Proceedings of an Academy may contain under one cover papers on Celtic Philology, Pure Mathematics, and Biblical Archæology. Hence without co-ordination in indexing these publications must be examined over and over again by the various bodies professing to present to their members or subscribers an adequate survey of progress in their respective spheres. All this duplication of effort could be avoided if analytical bibliography were organised on a scientific basis. It is of course true that the Class Lists of the "Subject Index" are somewhat behind date, and that the value of the Lists varies

considerably in respect of their sufficiency for research purposes. The inclusion, however, of another 50 or 100 periodicals in one Class List could be effected if the institution interested in the extension was prepared to furnish the additional matter and edit or supervise the editing of the extended Class List. An Anthropological or Historical Society might publish its own List from materials in part supplied by the Editor of the "Subject Index." The financial side of the question would, of course, have to be considered—but little difficulty is to be anticipated in this respect, for "The Subject Index" is not run for profit. Its accounts are duly audited. The additional copies required by the Society or Department requiring the extension of the Class List would probably cover the cost of the additional printing. In short, for the efficient organisation of analytical bibliography the Library Association needs and would welcome the active support of the learned Societies and the State Libraries. It is hoped that this Conference will do something towards bringing about a closer alliance between the parties concerned.

Loan Library. The loan collection of the Subject Index to Periodicals has already been briefly referred to—but a few words may be profitably added as to the general administration of collections formed for this purpose.

As a commercial proposition no loan collection of periodicals can cover the cost of its administration, but in conjunction with an organisation which provides a current index to its contents, the acquisition of the indexing organisation and loan collection by a Copyright Library offers to the latter body certain notable advantages. For instance the Copyright Library can dispense with the bulk of its analytical indexing, which can be transferred to the indexing organisation—thus reducing the cost of its cataloguing staff and printing bills. Its periodical collections will be reinforced by the Loan Library collection which will contain many foreign serials not subscribed to by the Copyright Library. Further the Index publications, by advertising the contents of periodicals indexed, will cause a steady flow of business to the photographic branch of the Copyright Library.

Finally the Copyright Library obtains access to the unpublished material of the Indexing organisation and can utilize the expert knowledge of the latter's staff.

As regards the housing of the Loan collection—there is no need to file newspapers or periodicals of the newspaper class—for where photostat negatives of articles can be supplied by the Copyright Library for a couple of shillings the need for loan does not exist. The periodicals selected for filing and distribution will remain unbound and be sent out on demand as single parts. This of course reduces the cost of postage, besides rendering a volume available to several enquirers. A still higher degree of economy in shelf space and cost of distribution would be effected if articles indexed were removed from their covers and filed in envelopes in the order of the Index headings. Thus in place of specifying the articles required—a student would apply for the *dossier* on the

subject. This dossier would be despatched to the nearest subscribing library, the curator of which would be responsible for the safe return of the envelope and its contents.

With regard to loan libraries in general. It is quite clear to me that the idea of instituting a loan library to pay is purely ephemerical. It is impossible to make it pay. The only question is how to run it in such a way as to do it at the minimum expense. I should say conditions would be these. In the first place, housing. If you house your loan collection in a great national library that is equipped with proper photographic reproduction apparatus, the necessity for filing duplicate copies of a very large proportion of your periodicals ceases at once, and what becomes a heavy expense becomes a source of profit to the institution which is harbouring you. The photostat machine is a very profitable machine.

Then I suggest that in the selection of periodicals for a loan library you should be guided by this selection of your index. Look upon your index as an advertiser. It is your library advertiser. The contents of a periodical are advertised to the public. They are placed in the very choicest positions in all the big libraries. Everybody is attracted to use them. Anything of import cannot be lost. Therefore I say that when you are collecting a loan library be guided by the index. If the index is not sufficient extend it. Do not collect periodicals which are not indexed. There is no demand for them.

With regard to the maintenance. It is perfectly simple. You will not think of binding your periodicals—they will be kept in the unbound form and you will send them out to begin with in numbers, but even with these restrictions, eliminating all periodicals which it is cheaper to photostat, the time will come when your national library will say you must reduce the bulk or go elsewhere. You can tell from your card index slips what articles in the magazine have been regarded as being worthy of reference ; cut them out, file them in your manilla envelopes ; put upon these envelopes the class heading in the index file envelopes in exactly the order of the headings in the index, and all the rest can go to waste.

If you look at a loan library from the business point of view I do not think there should be any difficulty in starting it. We have a nucleus of about 600 periodicals at present.

THE WORLD LIST OF SCIENTIFIC PERIODICALS.

Statement communicated by Prof. A. W. Pollard, C.B.

On the initiative of a Committee of the late Conjoint Board of Scientific Societies a list has been drawn up at the British Museum of 25,000 Scientific and Technical Periodicals published all over the world in the years 1900-21, and this is now being printed.

To each Periodical entered on this List a number is assigned, and a second List, or Index-section is now being compiled to shew which of these Periodicals are represented in British Libraries and where they may be consulted.

The plan which has been approved for the Index-section is that a number assigned to each Periodical in the List shall be printed in the Index, followed by alphabetical symbols for the co-operating Libraries possessing a file of it, printed in small Capitals grouped under alphabetical symbols of the Towns in which the Libraries are situated, these being printed in black type.

Thus a medical Periodical with List number 2357 possessed by the British Museum, Royal College of Surgeons, and Royal Society of Medicine in London, by the Radcliffe Library at Oxford and University Libraries at Cambridge and Edinburgh, would be indexed in the form

2357. L.B.M., C.S., S.M., C.U., E.U., O.R.

The Trustees of the British Museum while permitting the compilation of the List to be carried through as part of the work of two members of the Staff of the Department of Printed Books, had no funds available to assist its publication, and as originally planned the Index-section was restricted by the cost of printing. The Carnegie Trustees, by promising a Grant in Aid, has now made it possible to extend the Index so as to include the more important Libraries in all the chief centres of learning and industry where a Local Secretary can be found willing to help in circulating the Sheets of the List of Periodicals as they are printed off, and return to the Editor after they have been marked with the symbols of the local Libraries.

The co-operation of the Governing Bodies and Officials of all British Libraries, likely to be able to make any important contribution to this Index-section, has therefore been invited in order that it may be made as complete as possible, with the result that twenty Provincial Centres have undertaken to supply the information required from their local Libraries, the particulars received being co-ordinated by the Local Secretary. Twenty-five London Libraries are also giving their assistance.

The first section of the Editorial copy of the List has been distributed for the marking of Periodicals, and returns to a large extent received.

In the working out of the above scheme two results should be attained :—

1. There will be a printed List (each printed page faced with a blank for additions) shewing all the Scientific Periodicals published in the years 1900-21, with a printed Index indicating the Libraries up to a maximum of (probably) a dozen in which copies can be consulted.

2. In every locality where full co-operation has been secured, the printed Lists can be marked in manuscript so as to shew completely all the Scientific Periodicals possessed by Libraries in the locality. The importance of such complete local lists for improving the selection of Periodicals by co-operation among the different libraries need hardly be emphasized.

It is important to notice that, in so far as the *World List* can cover the ground, it will show students and librarians the periodicals which are *not* at present available in the United Kingdom, as well as those that are accessible.

It is hoped that the List will be ready for publication by the end of the year, but the Index-section will be issued later.

Note.—List of Centres included in the World List.

Aberdeen	Leeds
Aberystwyth	Liverpool
Birmingham	London
Bristol	Manchester
Cambridge	Newcastle
Cardiff	Nottingham
Dublin	Oxford
Dundee	Sheffield
Edinburgh	Swansea
Glasgow	Rothamstead
	St. Andrews.

[At the time of going to press there had been circulated to the local centres proofs of the list up to the letter S, covering approximately 20,000 titles, showing that this important work is rapidly progressing. Ed.]

SPECIAL LIBRARY METHODS:

Following introductory and explanatory remarks by Miss Stubbs, in regard to her exhibits illustrating the method and working of a Special Library, Mr. J. G. PEARCE raised several points of interest to the Conference, including a number covered by the subject for the session.

The question of centralisation or decentralisation was important. Documents had a physical existence and must have a physical location. To what extent was it desirable for such documents to be centralised in one place and to what extent was it desirable for them to be distributed so that they were more conveniently placed with regard to users? The matter was illustrated in connection with National Libraries by the concentration of certain important collections in London. The British Museum was a vast and vitally important library but nobody could pretend it was an institution which could be used by the student or the business man who needed something quickly. The mere size of the collection made rapid consultation an impossibility.

Perhaps the best and most widely used special library in the kingdom was the Patent Office Library in London, but here again professional users were handicapped by having to travel to London to make use of it.

In a works, one of the difficulties of establishing an Intelligence Bureau largely arose from the tendency of various departments to keep such books as they possessed in their own hands, and they frequently utilised the argument of convenience of ready access.

If concentration for all the departments in a works was desirable, was it desirable to concentrate the material for the offices of the company in towns away from headquarters?

An intelligence service should be formed for and have a field co-extensive with that of the main organisation. Practical considerations often prevented branches from having a separate service but these could often make use of the headquarters service.

The particular feature of an information service is the staff and it is through employing a small but highly qualified staff that the necessary mobility of information is assured.

Another matter which often concerns a special library is the manner in which information collected is used. Some special libraries have merely to supply information, others are required to pre-digest it and to present information in summarised form in order to save the time of those who require to peruse it, yet again others are required to work it into material for the press or for speeches for pushing particular policies or schemes. In this connection the special librarian may be utilised to an end of which he may not altogether approve. This may be particularly the case in economic, political or social work. Some people in charge of special libraries will not take the responsibility for compressing, reviewing or preparing information for which they make a search. For those who do the ideal is undoubtedly that of complete

impartiality and thoroughness. What use is made of facts depends upon the education, training and temperament of those who try to interpret them, but at least the source of the information; its importance and its completeness should be unquestionable. Those in charge of special libraries may well set themselves an ideal in this respect.

Extensions to the principle of collecting information are seen in the enormous expansion taking place in trade forecasting, referred to in Mr. Lyall's paper yesterday. In the States great efforts are being made towards developing technical and scientific services to newspapers, the accuracy of which is undoubted, and Science Service has been established at Washington to give to newspapers on very reasonable terms a regular daily service of scientific matter. The British Science Guild has attempted to do the same thing in this country. Considerable developments will undoubtedly take place in the near future in what might be termed the " vulgarisation " of special knowledge, carried out by men and women having the qualifications perhaps of teachers, of scientists, of journalists, that is, men and women who can write and speak in clear simple English and non-technical language, people who are not specialists, but who can apprehend and interpret the work of specialists. This work is essentially educational in character.

Finally a plea might be made for the principle of what might be termed " free trade " in published information among intelligence departments generally, excluding confidential information which cannot be revealed to any but authorised persons. The bulk, however, of any material collected will probably be published information available to any enquirer if he chooses to search for it. The ignorance of the average enquirer regarding sources of information is such that to many people the information might not exist at all. It is therefore suggested that those in charge of private and special library services should adopt as a principle the plan of giving free of charge any non-confidential information they can to any *bona-fide* enquirer. Such a principle would have its early reward because it would enable the special librarian to keep his own collection down to the minimum of size and hence to a maximum of efficiency, and to rely upon other special collections for information on those subjects on the margin of his own field.

SIXTH SESSION—

Chairman:
R. BORLASE MATTHEWS, Esq.,
WH. Ex., A.MI.C.E., M.I.E.E.

THE TECHNICAL PRESS AS AN AGENCY FOR COLLECTING AND ABSTRACTING INFORMATION.

By F. H. MASTERS
Editor of "*The Electrician.*"

Mr. G. K. Chesterton recently said that he belonged to a profession whose sole function was to talk of things it did not understand. I think that the organisers of this Conference must have approved this remark and that in this approval lies the real reason why I have been asked to come here this evening and read a Paper on one aspect of the large and interesting subject with which this body is concerned. No doubt the display of ignorance which I am about to give will throw your knowledge into greater relief and from that point of view at least will be beneficial.

To speak of the technical press as an agency for the collection, treatment and distribution of technical information is to realise at once this very important truth: That the press is not a producer of original information, but a machine that works for good or evil on material that some one else has produced. It may be compared to a funnel, but a funnel into which liquid is poured through the spout and out of which it flows over a large area. In passing through this funnel the liquid may be spoilt or diluted, or it may be improved or concentrated. Whether one operation or the other occurs depends on the nature of the catalyst which is inserted somewhere in the spout, the catalyst of course being the editor. Like all the rest of its species this analogy is not absolutely water-tight. For ideas are sometimes originated in the columns of the technical journals, and new suggestions are sometimes made which cause useful lines of thought and work to be started among its readers. To that extent then it does original work and is not a mere filter.

But in general as the title of this Paper indicates, the most important of the functions of the editorial staff of a technical journal is the selection and preparation for publication of what others have written, rather than to write themselves. A publisher of wide experience in technical journalism has said that there are four classes of editors: the one who can write, and does; the one who can't write and does; the one who can't write and doesn't; and the one who can write and doesn't. Of these classes he emphatically expressed his preference for the last, adding that the ideal editor was the one who wore out the soles of his boots and not the seat of his trousers. I cannot say that I endorse entirely either of these propositions. But they do bear out the theory, which is generally held among those who think about the matter, that each issue of the paper to be of any value must be the result of the investigation by personal enquiry of what is going on and not the result of sitting in an office waiting for profound and learned articles to flow in. They won't.

For while there is ever matter of a kind available—matter that is worth publishing—an editor can always do with more live stuff and especially with stuff which is written in such a way that

it can be easily used, is up-to-date and fits in with the policy, lay-out and general arrangement of his paper. Articles that fulfil these conditions are usually only obtained by asking for them, and not always then.

This raises another point. To-day most scientific and technical workers are specialists and most journals are general in their scope. The editor must therefore keep his outlook broad and, if he is in any degree successful in doing this, he should be able to indicate to the specialist on what subject and in what way he should write. The specialist is absorbed in his particular branch of the subject and it is right that he should be, for that absorption brings forth the best work. But it is wise when the time comes for publication that his appeal should be as wide as possible and this is where the editor can be of real assistance, both to the author and to the readers. It has been said by some cynic that successful journalism now-a-days is finding out what everyone wants, and then using all the resources of headlines, interviews and editorial comment to demand it. But I cannot help thinking that in doing something of this sort—of course in a dignified way—the technical editor has a real function. In other words his business is not only to collect information but to suggest subjects for treatment and to see that they are treated in a way which experience shows him—rightly or wrongly—will be of the greatest use. It is perhaps hardly necessary to add that this control does not stop when the article is written. For the editor can often suggest means whereby a contribution can be altered ; and its appeal widened and made more valuable.

While I do not propose in this Paper to lay down any hints for authors (that sort of thing is overdone and is largely unnecessary, for if the author cannot write his Paper no one else can do it for him) I may perhaps mention one thing, which I shall idscuss from another point of view later on. The habit has grown up, perhaps largely as the result of German influence, of writing articles which not only deal with the author's own new work, but summarise everything that has led up to that particular point. The result is an article of inordinate length which no editor can be expected to publish not only because it is too long but because it is uninteresting. Without wishing to be didactic I may say that the sort of an article the present day editor wants is one not exceeding 2,000 words in length with an appropriate number of illustrations. This means that every unnecessary word must be eliminated and every other remaining word must be scrutinised to see whether it is necessary or not. Past work must be dealt with by reference rather than descriptively. Attention to this second point has this advantage from this Conference's point of view that it forms an easy means of discovering what has been written on a particular subject ; so that even if the article itself is of little value that is compensated for by the care spent on the bibliography. I go so far as to say that bibliography is a necessary part of all so-called original articles.

Though it is perhaps too much to expect that every technical author should employ the same economy of language as does a

Hardy or a Conrad, most articles on technical subjects in their original state could be shortened with advantage and without anything that is of real value being omitted. Rigid sub-editing would in fact increase the value of nearly every contribution an editor has to read, and if the author himself shrinks from infanticide he should get some callous friend to do the foul deed for him. Attention to these two details will often mean the acceptance of an article while their neglect will result in its rejection accompanied by the usual hollow regrets.

No technical Paper that is conducted as a business and not as a hobby or as propaganda can, however ,depend entirely on what for want of a better term I have called original articles. To perform its true function as the mirror of the industry or profession that it represents the editor must either write or get written descriptions of new apparatus and work done and must publish accounts of the progress that is being made all over the world. To do this at all successfully he must depend on some sort of news service ; he must know for instance what is being published in other journals of a similar kind, and he must have correspondents who will keep him informed of what is going on over as large an area as possible. In fact the collection, treatment and publication of news, using the word in the broadest sense of the term, are the most important functions that any journal that is not a record of proceedings of a Society or simply a house journal can perform.

I suppose to this Conference the ideal journal would be one that contained in each issue a summary of all that had appeared on the subject with which it dealt since it was last published. Purely from the point of view of cost of production such a journal is impossible of attainment and if it were attained it would be very dull,—a cardinal error. But journals something like this ideal do exist. "*Science Abstracts*" may be cited as an example, and experience shows that though they are undoubtedly useful they are not useful enough more than just to pay their way. Last year for instance "*Science Abstracts*" ceased for the first time to be a burden on the funds of the Institution of Electrical Engineers and even now the margin is so small as to cause doubt whether the position can be retained. Yet it is a publication of undoubted value and deserves more support than it apparently receives. Many other publications of the same kind have been started and some are still in existence. But without exception those that are still going on receive a subsidy or moral support of some kind from bodies or persons interested in their maintenance. It may be taken for granted that no commercial journal would continue to exist if it published nothing but abstracts of what had already appeared elsewhere. In the first place in so doing it would stultify itself. There is so much unpublished matter to draw upon that to neglect it would be a grave mistake. Again, though the day of "stunts" has passed, every journal likes to publish something in each issue that no other Paper has got ; and in so doing it is performing a service to the greatest possible number of authors and to the cause which it represents. If it can obtain and maintain a reputation for always having something in

each issue that no other journal has published it will have gone far on the road to success. So that while it may be assumed that no technical journal will hesitate to publish an account of new work that has appeared elsewhere in some form or other, especially if the original source is not easily tapped by its readers, it may also be assumed that its chief aim is to secure originality for itself. In the second place it may be postulated that no editor will consent to his paper becoming simply an organisation for taking in other people's washing. It is as well that this should be so, for if every editor did so consent a group of journals dealing with the same subject would soon become an organisation for taking in each others washing. And race-suicide would be the inevitable result.

To discard generalities and come to particulars, so as to provide something for discussion, may I give a brief account of the way we deal, in the journal which I edit, with matter that has been published elsewhere ? This matter may be divided into two main classes : Papers read before Societies and articles which have already appeared in some other journal. These two categories have this great difference. In the first class the communication is published by being read, usually in abstract, before some meeting. The number of people who become acquainted with its contents in this way is obviously small and it might be thought that its publication in full in a journal with a general circulation would therefore be good policy, especially as such a contribution does not have to be paid for. Some editors do follow this course. But it must be remembered that though such a communication has no wide circulation when it is read it will eventually be published in the Journal of the institution concerned and be available, in the case of the larger of these bodies, to some thousands of readers. While therefore there is something to be said for publishing it in full there is a great deal more to be said for publishing it in abstract. A further reason for following this course is that such Papers are often inordinately long and to publish them in full would mean the allocation of space to them which we certainly cannot afford. It must be remembered that in a subject like electrical engineering the vast majority of articles published appeal only to a limited number of readers. That is another vital and difficult problem of an editor, which is however outside the scope of this Paper.

A second course is to give a long abstract which while it does not include every word does cover the main arguments in some detail and for most readers is so complete as to make any reference to the original unnecessary. The objections to this course are that such a published abstract also takes up a great deal of valuable space and it results in an article which is probably too long for the general reader and not long enough for the specialist. In fact it suffers from all the traditional disadvantages of a compromise. It must not be forgotten too that the Paper in its entirety will be eventually published and be available in libraries if not on the desks, so that to follow either of the courses that I have outlined is to cover the same ground twice—a policy which should be avoided.

We have therefore been driven to the conclusion that the best course is to give quite a short abstract of such Papers, an abstract which covers all the principal points and which gives such an indication of the trend of the Paper as will show all those interested in the subject with which it deals whether it is worth study or not. At the same time wherever possible we publish a short account of any discussion on it, to show how the Paper has been received. This policy saves the readers' time, it enables a wider variety of subjects to be covered (for editorial space is strictly limited) and it still gives sufficient indication to the specialist whether the Paper is worth further study. If it is he waits until the Journal of the body before whom the Paper is read is published, and absorbs its contents at his leisure. It may perhaps be pointed out in parenthesis that the adoption of this third policy does not save the editorial staff any time or trouble. For it takes longer to make a short abstract than a long one and is much more difficult to do successfully.

On "*The Electrician*" for reasons of make up, the actual length of the abstract published is determined by two factors: The value of the Paper and the amount of type on a page. The Paper is studied and it is decided whether it shall be given one column, a page (two columns), or two pages. The mechanical difficulties of "make up" render three columns an undesirable length, and pressure on our space make an abstract of more than two pages exceptional. Once the length has been decided the abstract has to conform to it. Editors have no compassion, but sub-editors soon learn how many pages of copy go to a column of matter and if they are in any doubt they go a little over than under for it is always easier (though not always easy) to cut down than to add. To the author who has spent many hours in compiling his Paper when he might have been playing golf this may all seem rather brutal. I can only sympathise with him; and add that editors not only cut down other people's articles but their own as well.

These general considerations apply equally to articles which have already appeared in some other technical journal. But there are some differences which may be mentioned. Such an article has already been published and has therefore been seen by as large a number of readers as the circulation of the particular journal in which it has appeared permits. The bloom is therefore off the fruit. If it has appeared in an American journal it may have been, probably has been, seen in the original by a fair proportion of the readers of the journal which wishes to use it second hand. If it has not been seen it can easily be referred to. On the other hand if it has appeared in a German, French, Italian and still more in a Swedish or a Russian journal it has probably neither been seen nor can it easily be referred to in the original. These considerations, besides the value of the article and perhaps the notoriety or otherwise of the person who has written it, all have their influence in determining the length of the abstract and in deciding whether after all a mere reference to it in a "fill-up" will not be sufficient.

I am not going to deal with the subject of editorial comment except to say that information that appears elsewhere is of course dealt with in that way in addition to or instead of by abstracts. I am told that these comments are very valuable to those on the look out for information.

I do not wish to imply that all the matter which comes into the office receives this treatment. An editor's chief task is selection and selection includes rejection. A great deal more is rejected than is published.

And this raises the still more delicate question, which I mentioned earlier, of original articles that are received and not published. Such articles fall into three classes. Those which are worthless in themselves because they deal with perpetual motion or the transmission of electricity from Kamschatka to London or with the death ray in one or other of its manifestations. Those which are quite satisfactory in length, style and even subject matter but whose treatment is not suitable for the particular journal to which they are submitted. These include popular articles on electrical matters which some peculiar mental kink causes authors to send to technical journals and also articles which are simply thinly disguised repetitions of something that has already appeared. In the third class are articles which are suitable enough in subject matter, style and treatment but which are simply too long to receive much chance of publication.

This class gives me a great deal of trouble and anxiety. It is becoming more and more difficult to publish them owing to limitations of space. Yet a refusal means that they will not be published at all, though they are certainly worth publication, for the space difficulty is present with all editors. The door is therefore gradually being closed to such articles and how to keep it open is a problem of which at present I see no solution. The easy suggestion is to say cut the articles down to an acceptable length, but though I should be last to say that pruning is not an advantage it can be carried too far.

It may be that the problem is not so urgent as it seems and that the number of articles which are really worth while publishing and which do not get published is not in the aggregate large. But it will become larger and this is therefore a matter which should receive consideration. The best solution seems that a greater use should be made of the pages of the journals of scientific societies and this can be done by more careful selection of the matter for publication in them, and especially by more rigid editing of what is published. But that also is another story.

The next point I may deal with is how we obtain the raw material from which each week's issue is made up. I have already mentioned original articles, Papers read before Societies and matter published in other journals and have explained how they are handled. Numerous examples of the first two of these classes of matter arrive without any conscious effort on our part and in any event can generally be obtained by writing a letter. In bulk the paper expended in producing them each year is enormous and

to examine them and extract their essence forms a large part of our work. Most technical associations and similar bodies have mailing lists and are generally only too anxious to keep the Papers in touch with what is going on. There are of course exceptions whose procedure resembles that of the oyster and the great fault of the rest—and it is a fault which could be easily overcome—is that they do not recognise how important it is to send out their information red hot. To announce the name of a new President ten days after the election has taken place is simply hopeless from the newspaper point of view yet this is but an example of what too frequently occurs, in technical as well as news matters.

The technical journal like every other Paper aims at being up-to-date though the term is perhaps relative rather than absolute. To be up-to-date is largely a matter of organisation and apart from that of education. Correspondents and contributors can, for instance, be persuaded to send out information so that they catch an issue rather than just miss it, and what is sometimes more important to give early notice of some event of importance. We prefer not to have to make a journey into the country on press day to see a demonstration, but even such troubles can be dealt with in emergency when it is worth while. And it *is* worth while to be up-to-date ; for nothing is more valuable to a technical journal than a reputation for always having the latest and most accurate news of what is going on. On " *The Electrician* " we work hard and make considerable sacrifices to attain that end.

Returning to our sources of information I may next mention the ordinary newspapers. These provide a good deal of matter in the raw state in more than one sense of the word. Such information must be very carefully handled before publication for obvious reasons. Their most useful function is to give hints that can be followed up, though this applies more to the industrial than the technical side of the paper's activities. They are however a source of information that must not be neglected.

But the best and most useful technical information is that which springs from personal intercourse. It would be interesting to know how many really good articles have had their genesis over the luncheon table, in a corner of the smoke room after dinner, or even on railway trains. One of the best articles I ever published was the result of a conversation while washing my hands in the Engineers' Club. By this I mean to say that the first hints are given in these queer places and it is then the editor's pleasure and duty to follow them up. Many an unfortunate author has made his own life a burden by dropping a chance remark in an unguarded moment. For editors are pertinacious creatures and never let go once they get their talons into their prey. Correspondents are another form of personal intercourse which is of much value. For, once again, a hint is enough for an editor to follow up to the bitter end.

It has been suggested that I might prefer to say how far a technical man can absolutely rely on a leading technical Paper for all the information he requires for his own field of work. I

should prefer to say nothing of the kind. But if I must be frank I will say little reliance can be placed on such completeness. I make this remark with the greater boldness because no technical Paper even approaches that ideal. I speak now of the Papers dealing with the branches of science and engineering with which I am most familiar. The fact is proved by the existence of such publications as "*Science Abstracts.*" If a technical man could rely on any one technical paper for all the information he required "*Science Abstracts*" and its relations would be unnecessary of course; though technical journals do not give their readers all they want, they give them enough and therein lies their justification. The fact is, of course, that the field in every sphere of human progress with which technical journalism is connected is becoming so wide that no journal can hope to cover the whole, certainly not in any one issue. If it tries to, it becomes a thing of shreds and patches. It is better policy to deal adequately and as fully as possible with the matters of real importance that arise as they arise, and to let the others go.

The final point in the scenario on which I was told to base this paper mentioned the existence of bureaux for answering internal and external (or readers') enquiries. "Bureaux" is, I think, rather too grand a word to apply to the organisation which is to be found in the offices of most technical journals for such a purpose. That does not mean that the organisation that does exist is not sufficient, but that it is rather spiritual than material. But as this is a domestic matter in whose details you can take little interest, it is perhaps best explained by giving some examples of the enquiries we receive and how we answer or attempt to answer them.

The enquiries we receive, and we receive a great many, can be divided into several classes. The first is to ask for references to articles that have been published in our own or other journals. If it is a definite article or series of articles that is required, usually this presents no difficulty. If on the other hand we are asked vaguely whether we know of an article or some small subject it is more difficult and it is still more difficult when we are asked generally to give references to anything we have published on, say, valves or ultra-violet light. If such an enquiry is made over the telephone on press day it may lead to misplaced facetiousness for which both participants are afterwards sorry. However we do our best to send every enquirer contented away. The second class of enquiry is to ask us to recommend books. This is not always as easy as it sounds. A man who asks for a book that deals with the design of commutators for rotary converters and apparently nothing else must not be offended if he is told he had better write one for himself, though it is not an answer that is likely to satisfy him. When we can, of course, we recommend the books that we publish ourselves. We honestly think they are best.

Then again we are asked to do what is really consulting engineers' work though perhaps that is rather too dignified a name to apply to it. But it ranges from questions about electricity

schemes for a small town to how to connect up an electric bell. The combined grey matter in the office can generally deal with these without much trouble. But one day I was asked how a telephone instrument of which a sketch was enclosed should be connected up. I did not recognise the species and it did not appear in any of the various books I consulted. I began to think that some one was pulling my leg, especially as there seemed to be an entirely unnecessary terminal on the instrument. But I sent it to a friend who is a perfect mine of information about prehistoric telephones and he sent it back not only with a diagram of its connection but with a short biography. So once again we were able to satisfy an enquirer.

We also receive enquiries from people who wish to become electrical engineers or wish to make their children electrical engineers. Ladies sometimes call on me for the same purpose. These we deal with as tactfully as possible though I always feel that I ought to report to the Royal Society for the Prevention of Cruelty to Children. We once had an enquiry as to the best way to become a technical journalist. I hope this gentleman is now receiving appropriate medical attention. Finally we receive a great many of what may be called commercial enquiries. These range from questions as to where things may be bought, those asking the voltage of supply at a certain place to those of the "Who's Who" variety. Fortunately we publish two books dealing with these matters and such occasions offer therefore a chance for the editorial staff to practice a little salesmanship.

In a more serious vein, however, such enquiries, which I may say we are always glad to receive, show that there is a general feeling that the technical journal is in a position to supply more information than it publishes in its pages. If that is so an idea of fundamental importance has been grasped. For a technical journal should be a clearing house of information ; and the more nearly it approaches to that ideal the more nearly will it achieve success. That statement implies rather more perhaps than appears at first sight. A technical journal must not only collect and sift information ; it must give some indication as to its value. It must place contending views in their proper relation to one another. It must treat a variety of subjects as their relative importance deserves. It must be up-to-date with its information. And above all it must present that information so that it is easily and quickly assimilated. Its object in short must be to act as a common medium for intercommunication among those working on the subjects with which it deals. Its success or failure will be determined by the results it is thus able to achieve.

The basis of technical journalism differs from that of the newspaper. The daily journal lives for the day and what it says to-day it may safely contradict to-morrow. A technical journal cannot do this. It must be sufficient for to-day and for to-morrow as well. It must not only give a dissolving view but a permanent record of the progress that is being made. While therefore a newspaper may ignore certain happenings without danger, a technical journal must consider them from the point of view not

only of their present news but of their future historical value, and must act accordingly. At the present time we have in the scientific field workers whose efforts may seem to be leading to no common goal. But it would be exceedingly dangerous to deduce that that is so. It would be equally unwise to assume that the results they may be achieving are only of limited interest. They may be of fundamental and universal importance. And that is a possibility which an editor must always bear in mind. The universality of science is no chimera, but a living fact, and nothing can happen in one part of it without there being some effect however remote on another. From this point of view the collection of information and the means for discovering where information can be found, not to speak of the organisation of libraries and in general making it more easy to acquire information, are all of the highest value. In turning your attention to such a subject this Conference is doing great work, work the results of which no one will welcome more than those who are concerned with technical journalism. On the other hand the technical Press can be of the greatest value to a live Bureau of Information, especially from the industrial point of view. Considered collectively rather than individually it is the foundation upon which all work of the kind you are doing—and most useful work it is—must be built. It is to your interest that the Press should be as efficient and useful as possible and on you to a large extent lies the responsibility of making it more worthy to be so described.

A NOTE ON THE RELATIONSHIP BETWEEN SPECIAL LIBRARIES AND THE TECHNICAL PRESS.

By Vincent C. Faulkner,
Editor of "*The Foundry Trade Journal.*"

The actual work of the technical press having been so excellently described in another paper presented to the Conference, this note will be confined to an examination of the relationship of the technical press to the special library, it being assumed that the functions of both are well understood.

It is useless for the technical press not to realise that special libraries are potential competitors, as their functions are in many ways the same. Fortunately for the former, on account of their facilities, they can supply the latest information so much more quickly.

Most technical journals pride themselves on their "service department," which occupies a very considerable portion of the time of the editorial staff. Assuming it is the duty of the director of a special library to answer any question required by the directorate or staff of the firm or organisation supporting the library, whether statistical or technical, then there is probably a fundamental difference in the type of answer given, especially for the latter.

The director of the special library should prepare a report of existing information, together with any useful observations he can add.

The editor of the technical journal, on the other hand, will usually give the essentials and indicate to the enquirer where more detailed information is to be obtained.

Special libraries are invariably attached to research organisations, and as it has been suggested during the Conference that editorial staffs should extract each paper published, and also give a bibliography of what has appeared in its contemporary press, this aspect will be dealt with.

Primarily, an editor should assume that every line he prints is of interest to the industry he serves. It is his work to select and publish only matter of direct interest. In publishing an abstract, he is leaving the choice of what and what not to read to his readers, which is psychologically wrong.

The periodical printing of bibliographies of papers appearing in contemporaries would bring about (*a*) a duplication of effort by every paper, (*b*) the informing of readers that the periodical fails adequately to cover the entire field, (*c*) that the editor knows of the existence of a paper by Mr. X., which he does not consider worth while to publish, and Mr. X. may be annoyed, and (*d*) allows a criticism of the editor's judgment, which is not desirable from his viewpoint.

Several of the directors of the national research organisations present at the Conference complained, indicating that they were

inadequately served by the technical press covering their particular field. Perhaps they forget that a technical journal is primarily a newspaper, and technical information is looked upon as news which will help any particular industry to improve its product or extend its business.

Generally speaking, it is not worth the while of the technical press to cater for the research worker. He is nowadays apt to be divorced from the realities of industry. Better to serve the industry, and purely from the editorial standpoint, the journal must have advertisements. The greater this revenue, the more facilities available to the editorial staff for giving service to the industry. The collection of news is expensive. The paper, therefore, must be made interesting to those in the industry with a buying capacity. Fortunately, these are usually the " people that matter," and hold positions that can even be aspired to by the research worker. The motive force of an industry is concentrated in a co-operative effort which exists, or should exist, between the directorate, managers, and foremen.

When the research worker's efforts have gained the active attention of these individuals, and he is actively co-operating with them, he will find his technical paper of very direct interest. He will find the periodic price list has no longer the academic value it had. He will be interested in reading articles which formerly he regarded as being academically unsound, but now finds that, somehow or other, they agree with practical conditions. If research workers require a specialised technical press, they must not only convince their industry of the necessity for such, but must also procure from that industry a subsidy for its production.

A fundamental difference between the effort put forward by the director of a special library and the editor of a technical journal is that in the former case his work must be regarded as confidential, whilst in the latter, his work has to pass the test of the percentage of his readers that any article will interest. If it became known that an important director sought information outside his normal activities, through inadvertency on the part of the person in charge of a special library, then the success of the scheme envisaged might be jeopardised. The director of a special library is practically a confidential adviser to his directorate or association. The editor of the technical journal, on the other hand, has merely to direct the thoughts of the industry he serves into profitable channels.

The issuing to the press of periodic bulletins containing a mass of technical data in abstract form by special libraries subsidised by an industry is wrong, because it tells its supporters as plainly as possible that either the information is of little value or that the general public are getting results which they (the supporters) have a right to regard as confidential. A bulletin, serving as a personal contact between the director of the library and its supporters, is admirable. It can contain an appeal for widening that support, so that its activities may be extended for the general benefit of the industry.

It has been suggested during the Conference that the freedom of the technical press is impaired by advertisers promising business if an inspired article appears in the editorial columns. Regarded reasonably, such action can usually be turned to the benefit of the reader and the industry represented by (*a*) suggesting more than the advertiser wants. That is, offering to describe his works or the technical production of his goods. Obviously, in either case, there is a definite news value; (*b*) extracting from his copy that which is of purely news value and deleting the rest. It is sheer laziness on an editor's part to accept an article from an advertiser without investigation.

Finally, the author is convinced that it will be advantageous to continue the co-operation between the press and the special libraries by means of conferences similar to the present one, so successfully organised by Dr. R. S. Hutton and Messrs. J. G. Pearce and A. F. Ridley. They are to be congratulated on their effort to secure a national expression of opinion as to the need or desirability of the formation of a permanent organisation which will cater for those whose duty it is to collect and disseminate specialised information.

* * *

Mr. J. G. Pearce welcomed the statements regarding the accuracy and impartiality of the material appearing in the technical Press, and said that it was gratifying to have an assurance from the speakers on that point.

He also referred to the size and format of technical papers and periodical publications, and suggested it might be desirable to consider whether it would be possible to arrive at any degree of uniformity in this respect.

Mr. Leon Gaster supported Mr. Pearce, and pointed out that the association between libraries and the technical Press should be as close as possible.

Further discussion touched upon the relationship of technical editors with the various interests which characterise their groups of readers.

Mr. V. C. Faulkner: With regard to my attitude to the research worker—he has to take his place amongst the thousand readers who read technical journals, and he gets his fair share. The man who is our best friend is the man in the works—the departmental manager. We do not pretend to serve the research worker. We serve the man in the works—the technical manager is the best man. He can understand what the research worker wants.

Chairman:
Leon Gaster, Esq. F.J.I.

TRAINING OF MEN AND WOMEN FOR WORK IN BUREAUX OF INFORMATION.

By Dr. E. A. Baker.
Director, School of Librarianship, University of London.

The School of Librarianship is very keen on keeping abreast of modern developments. It was established primarily for the benefit of the Public Libraries of the country ; but as a matter of fact, our students have gone into all kinds of libraries—British Museum, ducal, and other private libraries, university and college libraries, works' libraries, and even the *Times* Book Club.

One of the first remarks that I hailed with pleasure, in the course of this Conference, was from somebody who said that the fundamental principles of librarianship are the same, whatever the library may be—the same for general libraries and the same for special libraries. I thoroughly agree with that truth, and perhaps the best thing I can do to begin with is to outline the way in which we endeavour to inculcate those general principles.

The principle at the back of our present syllabus is that the students we turn out should combine a good general education with technical training in librarianship. We, therefore, put first a group of subjects representing general education—languages, for example. We expect our students to know English and Latin ; we expect them to know one modern foreign language. In fact, we do not admit students who have not had a sound general education. We expect them to have matriculated, or to have passed an examination that is equivalent thereto, and something like 20 per cent. of our students on entering are already graduates ; not only graduates in arts, but some also graduates in science. Among other subjects of a general character is literary history. Literary history, as we teach it, is not merely the history of pure literature, but the history of the literature of science, the literature of philosophy, and the literature of almost any subject you can think of. We teach the subject as it should be known by the practical librarian, that is, as knowledge of actual books dealing with a particular branch of learning, and of their relative merits and uses.

Coming now to the more technical side of our training, we have a series of subjects which you will immediately recognise as extremely valuable to yourselves. First of all, cataloguing and indexing. Every librarian of a special library must be an adept in cataloguing and indexing. We do not, perhaps, carry our treatment of indexing to such an advanced stage as is demanded in a research department, but we do lay the foundations for a first-class knowledge of the art of indexing, and we are prepared, if necessary, to carry the teaching to a higher grade.

We teach various systems of classification, so that any student who has gone through our course will be able not only to apply the Dewey system or the Library of Congress system, but to

adapt himself to any system that is already in vogue, or is particularly suitable to the line of research followed in any given library or information department.

We deal, of course, with bibliography—not only bibliography in the more academic sense, but with that branch of bibliography which is of more importance to you—that is, book selection. We also deal with subjects like library organisation and library routine, which are also useful and invaluable to the special librarian, and which enable our students to grapple with such vital problems as that of centralisation, or the reverse, the pooling of resources, etc. Nearly all our subjects are of value to the special librarian and to the research library. There are also a variety of other subjects that come more or less into the curriculum. Our students naturally acquire a pretty wide knowledge of the sources of knowledge in books and in libraries. We give them a large amount of practice in the art of tracking down facts, where to look for various kinds of information, how to run an enquiry desk, how to conduct a bureau of information, etc. We expect them to become conversant with most of the periodicals —with all the important periodicals, not perhaps the more special publications, but, of course, they must get acquainted with the general run, before they deal with specialised scientific and technical periodicals. They compile lists of periodicals and make themselves acquainted with their relative values. They become familiar with various filing systems, library and office apparatus, how to handle and preserve, and make available such things as pamphlets, maps, prints, drawings, and all sorts of fugitive material; and in the course of their study of these various parts of our curriculum, they naturally acquire a considerable knowledge of library resources in general—the library resources of different places, and how to make use of such when their own collections are insufficient. They ought to be able to consider intelligently problems like the use of union catalogues which will bring the contents of numerous libraries to a focussing point, and the application of the clearing-house principle on a large or on a small scale. All this seems to me to be useful and necessary to the special librarian.

I do not know whether you suggest that we ought to specialise for the particular benefit of the special librarian. It is a point that I am not at all sure about myself. Only a few months ago, the head of a research department in a very large firm (employing 30 chemists) asked me if I could offer him a librarian, not only to work their small collection of books and large collection of periodicals but to abstract and index the material therein contained. He wanted somebody who had a thorough library training with a knowledge of languages, but was not a specialist. He preferred to have somebody who was not a chemist, but had had a library training. I sent to him a girl of 20 who had no scientific or technical knowledge whatever. Here is an example of a special librarian who has not had any training in the special subject of research, but merely a grounding in library principles in general. It is possible that specialisation is not desirable until

after the young librarian has taken charge. At the same time, we have a certain amount of specialisation already. Mr. Headicar has given us a course of nine or ten lectures on running commercial and technical libraries, and we have had Mr. Pearce and one or two specialists lecturing on the problems you have been dealing with at your Conference ; but that is the only extent to which we have specialised in that direction, except in the course of our work in book selection. We teach book selection in a very practical way. It is not a science, but an empiric art ; and we train our students by allotting them certain subjects individually, letting each student prepare a list of the best books on a specific subject, which are indexed on cards. We thus have an enormous accumulation of cards—the result of four or five years' work on those lines. Some of the students elect to specialise—some take useful arts, that is, technology ; some take science, some commercial and business libraries ; and are thus preparing themselves for specialising in that kind of library. They all get a thorough grounding in the selection and use of reference books, and they all have their judgment disciplined in the general selection of books, both from the point of view of the purchase of books, and from the point of view of guidance to the users of libraries.

We do not attempt to teach them abstracting. We do not, at present, teach them advanced indexing. Of course, at present we do not teach them anything in the way of scientific research ; but I think that the courses we give do form a very sound method of training for both general and special librarians. It is just the kind of drilling that might be given to clerks and others who are beginning their work in your bureaux of information and in your special libraries. It is the only course of training that is available in this country, and it is available at quite a low cost. Our fees are something like one-third or one-quarter the cost price of the teaching. That, of course, is due to the munificence of the Carnegie Trustees. They gave us a sum, five years ago, which we have now exhausted ; but they have come forward again and given us a smaller sum, and the Senate of the University are footing the bill for the forwarding of the plan. If you have any suggestions to make as to further courses—special courses—I shall be very glad to put them before my committee.

One suggestion was that we might have a special Easter School at a centre like Manchester, where we might specialise on special librarianship. We might, perhaps, get Mr. Pearce to come and lecture. It would be beneficial to our own students and to those that you might send. If you think well of that suggestion, you might, perhaps, refer it to your committee, and something might materialise between now and next Easter. We shall be very glad to carry out your wishes if possible, and, in fact, we shall be very glad to consider any further suggestions you wish to make.

* * *

In reply to queries, Dr. Baker said that the course lasted two sessions, and that the cost was sixteen guineas per session. At present, there were three times as many women as men taking the courses. Several old students

of the School now hold important offices in special libraries; some of these were present at the Conference. The School itself had a special library, containing the best works on all kinds and grades of library economy, not excepting the economy of the special library. He invited members of the Conference to inspect its shelves of bibliographical and other indexes, the master-keys to all the stores of information, even on the most technical subjects. Replying to criticisms that special scientific and technical training was indispensable, as well as a grounding in general librarianship, he said that in some libraries this might be the case, in others, the knowledge of library technique was all-important. Where special qualifications were required, he advocated the acquirement, first of a science or an art; degree in the given subject, and then a year's training in library methods at the School. Graduates were allowed to complete the course in a single year, and when they had already taken certain portions of the course for their degree examination, and thus secured exemption therefrom, they found this not too difficult.

RESULTS OF THE CONFERENCE.

By J. G. Pearce.

With the permission of the Conference, Mr. Pearce summarised the main features which had emerged.

(1) The Conference had shown that there was in existence a surprisingly large and diverse series of information agencies all concerned with the collection, treatment, and dissemination of documentary material and fact knowledge. Many of these, undoubtedly doing useful and independent work, were previously unknown to each other.

(2) It was felt that, in spite of wide differences in subject matter, there are common to all these agencies a number of problems that repay discussion and that the Conference formed the first definite link and attempt at co-ordination between these agencies.

(3) The Conference considered that these agencies offered opportunities of co-operation which would enable them not only to provide a maximum service to their parent bodies, but to lend to each other and to the State and public generally a measure of useful time and labour-saving assistance.

(4) The Conference considered that a special collection of information is often most efficient when of the smallest possible magnitude, and considered that the fullest mutual co-operation and assistance between special libraries should aid each more effectually to specialise its own resources and hence to minimise its size and increase its possibilities of service.

(5) The Conference considered that special libraries and intelligence services did not form a group of entirely new institutions, but represented, in the main, organised attempts to make the most effective use of collections of information in national and public libraries.

It followed that special libraries had an integral relation with national libraries, with Government departments, technical institutions, and other bodies which serve as sources of information, made useful through a special library. The movement, in other words, made for more effective use of existing resources rather than created a multiplicity of independent, self-supporting units. It was also clear that the movement had a unique relation with the Press, which is not only a powerful agent in itself for collecting and disseminating information, but the main source from which all special libraries must draw their material.

(6) The Conference considered that if its proceedings were circulated and an attempt made to marshal wider support, an organisation could be evolved capable of rendering the greatest possible service to the country as a whole, and become self-supporting. It was considered desirable to ensure the continued co-operation of the interests represented, and in giving effect to this desire, the Conference appointed a Standing Committee, to which reference is made elsewhere.

Appendix I.

First Conference on Bureaux of Information and Special Libraries.

High Leigh, Hoddesdon, Herts., 5th-8th September, 1924.

List of Delegates.

Identity No.		
1	S. E. Alford	Lever Bros., Ltd.
2	Miss M. Aslin.	Rothamstead Experimental Station.
3	Dr. E. A. Baker.	Director, School of Librarianship, London University.
4	W. Barbour.	Nobel's Explosives Co., Ltd., Ardeer.
5	A. H. Barley.	Leppington House, Hertford.
6	G. Basil Barham.	Editor, *The Contract Journal.*
7	A. R. Barnes.	Geo. Philip & Son, Ltd., London.
8	H. Beaver.	Queen Anne's Lodge, S.W.1.
9	R. Baxendale.	L. M. S. Railway, Euston.
10	Miss A. L. Bennie.	Metropolitan-Vickers Co., Ltd., Manchester.
11	Capt. E. W. Birch.	Instn. Automobile Engineers.
12	Dr. S. C. Bradford.	Science Museum, London, S.W.7.
13	A. G. Brown.	Calico Printers' Association, Ltd., Manchester.
14	J. W. Christelow.	British Portland Cement Research Association, Gravesend.
15	P. Cohen.	Unionist Central Office, Westminster.
16	W. Croslie Coles.	James Pascall, Ltd., Blackfriars, S.E.1.
17	W. Malcolm Corse.	U.S. National Research Council, Washington.
18	Miss D. C. Crowhurst.	Rural Industries Intelligence Bureau, London.
19	B. Davenport.	Calico Printers' Association, Ltd., Manchester.
20	W. H. Dawson.	Universities Bureau of the British Empire.
21	Miss I. H. Dudley.	British Cast Iron Research Association, Birmingham.
22	D. Finlayson.	British Motor Research Association, London.
23	V. C. Faulkner.	Editor, *The Foundry Trade Journal.*
24	Mrs. V. C. Faulkner.	
25	Miss M. Fletcher.	Librarian, Research Dept., Woolwich.
26	H. Vincent Garrett.	Chief Librarian, Rowntree & Co., Ltd., York.
27	Leon Gaster.	Circle of Scientific, Technical and Trade Journalists.
28	L. D. Goldsmith.	Research Laboratories of the G.E.C., Wembley.
29	Allan Gomme.	Librarian, the Patent Office Library.
30	L. J. Gray.	Library of Ministry of Agriculture and Fisheries.
31	B. M. Headicar.	Librarian, London School of Economics.
32	L. Honeyburn.	Nobel Industries, Ltd., London.
33	E. Wyndham Hulme.	Late Librarian, The Patent Office Library.
34	Dr. R. S. Hutton.	Director, British Non-Ferrous Metals Research Association, Birmingham.
35	Mrs. R. S. Hutton.	
36	Miss E. M. Irby.	Union of Post Office Workers, London.
37	L. Stanley Jast.	Chief Librarian, Manchester Public Libraries.
38	H. J. Jeffery.	Imperial Institute.
39	Mrs. H. J. Jeffery.	
40	Col. E. L. Johnson.	Director, Cleveland Technical Institution.
41	Miss D. W. Johnson.	British Non-Ferrous Metals Research Association.
42	Dr. C. R. Jones.	British Flour-Millers' Research Association, St. Albans.
43	L. E. Jones.	W. P. Thompson & Co., Ltd., Liverpool.
44	Miss A. M. Kelley.	Secretary, Women's Service Information Bureau.
45	E. S. Kent.	Library Bureau, Ltd., London.
46	Miss D. Knight.	Librarian, National Institution for Research in Dairying.
47	Miss A. L. Lawrence.	British Medical Association.

DENTITY No.		
48	H. I. M. Lewer.	Research Dept., W. T. Henley's Telegraph Co., Ltd.
49	H. G. Lyall.	London Research and Information Bureau.
50	F. H. Masters.	Editor, *The Electrician*.
51	R. Borlase Matthews.	Greater Felcourt, East Grinstead.
52	Col. J. M. Mitchell.	Secretary, Carnegie U.K. Trust, Dunfermline.
53	W. G. W. Mitchell.	Lynton, Newbury, Berks.
54	F. K. Neath.	Librarian, British Cast Iron Research Association, Birmingham.
55	Miss R. E. Omash.	Unionist Central Office, Westminster.
56	A. R. Page.	B.S.A. Co., Ltd., Birmingham.
57	J. G. Pearce.	Director, British Cast Iron Research Association, Birmingham.
58	H. E. Potts.	W. P. Thompson & Co., Ltd., Liverpool.
59	Mrs. H. E. Potts.	
60	A. F. Ridley.	Librarian, British Non-Ferrous Metals Research Association, Birmingham.
61	Mrs. A. F. Ridley.	
62	Miss M. Rosenhain.	Warrawee, Coombe Lane, Kingston Hill, Surrey.
63	Maj. W. E. Simnett.	Late Director of Intelligence, Ministry of Transport.
64	F. L. Sharp.	Dept. of Overseas Trade.
65	E. W. Fraser Smith.	Secretary, N.E. Coast Instn. of Engineers and Shipbuilders.
66	Miss E. Snowden.	Librarian, B.T.H. Co., Rugby.
67	C. A. Spencer.	Records Bureau, Dept. of Scientific and Industrial Research.
68	Foster Sproxton.	British Xylonite Co., Ltd., Manningtree.
69	Miss L. Stubbs.	Metropolitan-Vickers Co., Ltd., Manchester.
70	Miss P. Strachey.	London Society for Women's Service.
71	Kelman Topping.	National Bank of South Africa, Ltd.
72	P. K. Turner.	Editor, *Experimental Wireless, etc.*
73	Miss A. H. Ward.	London Society for Women's Service.
74	F. B. Howard White.	Mond Nickel Co., Ltd., and Henry Wiggin & Co., Ltd.
75	Dr. J. C. Withers.	British Cotton Research Association, Manchester.
76	Sinclair Wood.	Lever Bros., Ltd., Business Research Association of Great Britain, and Publicity Club of London.
77	Fleetwood Pritchard.	Advertising and Publicity, Ltd.
78	E. Booth.	Librarian, Municipal Technical School, Birmingham.
79	W. Bell.	Addressograph, Ltd., London.
80	J. T. Walton Newbold.	Labour Research Department.
81	Mrs. A. H. Barley.	Lappington House, Hertford.
82	A. L. McCredie.	President, Business Research Association of Great Britain.
83	H. A. Slack.	*The Times*.
84	R. Elsdon.	Iron and Steel Institute, London.

[Note:—*Delegates Nos.* 6, 14, 41 *and* 53 *were prevented from attending the Conference*].

APPENDIX II.

FIRST SPECIAL LIBRARIES CONFERENCE.

5th-8th September, 1924.

RESOLUTIONS PASSED BY THE CONFERENCE.

1. That the publication entitled "Classification for Works on Pure and Applied Science in the Science Library, 2nd Edition, 1921, price 18/- nett," will be of extreme value to many Special Libraries and students. It is therefore suggested that its existence be made more widely known, and the price very materially reduced.*

2. That in the opinion of this Conference, the circulation, and hence the utility, of certain Government publications is greatly limited by reason of their high prices, and that these prices should be fixed at a level which would ensure the maximum sale.

3. That a Committee be appointed, to be called the Standing Committee of the First Conference on Special Libraries, for the purpose of considering in what way the interests of Special Libraries may be fostered, and to convene a Conference or meeting at a later date, and to make a report. This Committee is empowered to discuss matters with the Library Association, with a view to securing the co-operation which is desirable.

4. That the proceedings of this First Conference on Special Libraries reveals the existence of a large number of agencies concerned with collection, treatment and dissemination of documentary material, which, whilst very diverse in character, have common problems which repay discussion.

The Conference affirms that Special Libraries should render each other the fullest mutual co-operation and assistance, and that as channels through which information may be collected they should make the greatest possible use of national and local libraries, the press, and other sources.

5. That this First Conference on Special Libraries and Information Bureaux, after three days' deliberations on topics of common interest, hereby resolves that steps be taken to ensure a continued co-operation of those represented. The Conference anticipates that, provided action is taken to place a report of its proceedings before those attending, and other prospective members, and an active Committee with an executive officer is appointed to marshal a wider support, an organisation can be evolved capable of becoming self-supporting in the course of two or three years, and of performing a great service both to those who control and those who use libraries for the most diverse special interests.

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*This and the following resolution were brought to the notice of His Majesty's Stationery Office. The price of the "Classification" has now been reduced to 10s. nett to the general public, and 5s. nett to Public Libraries and certain other institutions. (*Ed.*)

APPENDIX III.

LIST OF EXHIBITS.

During the Conference, an interesting collection of literature on subjects connected with Special Library work was exhibited, by the kindness of several members of the Conference. A catalogue of these exhibits is appended, because it is thought that they might be of interest and use to the readers of these Proceedings. The list does not, of course, constitute anything approaching a bibliography of the subject.

The final portion of the list is devoted to a small selection of interesting items of business and special library equipment which were exhibited by several enterprising manufacturers of library and office furniture and filing equipment, etc.

LITERATURE RELATING TO SPECIAL LIBRARY ACTIVITIES.

AMERICAN CHEMICAL SOCIETY. A. C. S. News Service, 810, 18th Street, N.W., Washington, D.C.
Several specimen issues, one marked "For release for morning papers, April 6, 1923." (Mimeographed).

—— Symposium on library service in industrial laboratories. Papers presented at 57th meeting of the American Chemical Society, April, 1919, and printed in *Journal of Engineering and Industrial Chemistry*, 1 June, 1919, Vol. XI., No. 6.

BARROWS, F. E. Investigations of the Chemical Literature. (Reprinted from *Chemical and Metallurgical Engineering*, 1921). 40 pp. New York, 1921.

BRITISH CAST IRON RESEARCH ASSOCIATION. Quarterly Bulletin (several issues), and other specimen publications.

BRITISH COTTON INDUSTRIES RESEARCH ASSOCIATION. Bulletin. Nos. 1 to 5, inclusive.

—— Summary of Current Literature (on Cotton and related subjects). Specimen current number.

—— Summary of current literature. Bound indexed volume for 1922.

—— Shirley Institute Memoirs, 1922 and 1923.

BRITISH LIBRARY OF POLITICAL SCIENCE. Bulletin, *edited* by B. M. Headicar Librarian. Specimen issues dated August, 1924.

BRITISH NON-FERROUS METALS RESEARCH ASSOCIATION. Bulletin, Nos. 10, 11 and 12, 1923-24.

—— Union list of Periodical Publications of interest for reference on Industrial Metallurgy, taken by 14 libraries in London, Birmingham and Manchester. 4 pp. 1922.

—— Several specimen publications, showing the make-up of illustrated translations of foreign technical papers, prepared for circulation among members of the Association. (Miscellaneous Publications, Nos. 30, 31, 35, 39.)

BRITISH SCIENCE GUILD. Catalogue of British Scientific and Technical books covering every branch of Science and Technology, carefully classified and indexed. Prepared by a Committee of the British Science Guild. pp. 376. British Science Guild, 1921. 10/-.

BUSINESS RESEARCH ASSOCIATION OF GREAT BRITAIN. Memorandum and Articles of Association. (Founded to promote for the general good, the more extensive use of research in the service of all branches of industry and commerce). 16 pp. 1, Arundel Street, W.C. 2. 1924.

COMMITTEE ON THE COLLECTION AND PRESENTATION OF OFFICIAL STATISTICS. Report prepared by a Committee appointed by the Cabinet. 39 pp 1921. H.M. Stationery Office. 1/-.

CRAIN, G. D., Jr. Crain's Market Data Book and Directory of Class, Trade and Technical Publications. 4th *edition*. 505 pp. G. D. Crain, Jr., Chicago. 1924. $5.00.

DEPARTMENT OF OVERSEAS TRADE. (*Development and Intelligence.*) Descriptive account of the activities of the Department. pp. 33. June, 1924. Dept. of Overseas Trade, 35, Old Queen Street, S.W.1.

—— List of Newspapers and Periodicals received. 3rd *edition.* 34 pp, June, 1923.

EASON, A. E. Where to seek for Scientific Facts. 48 pp. S. Rentell & Co. Ltd., 36, Maiden Lane, W.C.2. 1924. 1/-.

FARADAY SOCIETY. The Co-ordination of Scientific Publication : a general discussion held under the Chairmanship of Sir Robert A. Hadfield, Bart. 1918. 29 pp. 3/-.

FLEMING, A. P. M. Industrial Research in the United States of America. 60 pp. Published by the Dept. of Scientific and Industrial Research for H.M. Stationery Office. 1917. 1/-.

FLEMING, A. P. M. and PEARCE, J. G. Research in Industry : the basis of economic progress. 244 pp. Sir Isaac Pitman & Sons, Ltd. 1922. 10/6.

GRAY, W. F. *Ed.* Books that Count : a dictionary of useful books. 2nd *edition.* 290 pp. A. & C. Black, Ltd. 1923. 7/6.

HAMOR, W. A. Bibliography, the Foundation of Scientific Research. 5 pp. 1923.

HAMOR, W. A. and others. Chemical Reading Courses. 26 pp. 1920. Reprinted from *Journal of Industrial and Engineering Chemistry.*

HIS MAJESTY'S STATIONERY OFFICE. Monthly Circular (of recent selected Government Publications). No. 67. August, 1924.

HULME, E. W. Statistical Bibliography in Relation to the Growth of Modern Civilisation : Two lectures delivered in the University of Cambridge in May, 1922. 50 pp. Grafton & Co., 1923. 6/-.

IMPERIAL MINERAL RESOURCES BUREAU. Minerals of the Empire : *British Empire Exhibition, Wembley,* 1924. 315 pp. 1924. 5/-.

KAISER, J. Systematic Indexing. (*The Card System Series,* Vol. 2.) 258 pp. John Gibson, 63, Coleman Street, E.C.2. n. d. 16/-.

KRAUSE, MISS L. B. Better Business Libraries : Talks with Executives. 98 pp. Indexers Press, Chicago. 1922. $1.00.

LIBRARY ASSOCIATION. Class Catalogue of Current Serial Digests and Indexes of the Literature of Pure and Applied Science. (Exhibited at the Liverpool meeting of the Association, September 2-6, 1912.) 40 pp. 1/-.

—— Subject Index to Periodicals :

1920, A. *Theology and Philosophy.* 98 pp. October, 1922. 6/-.
B.-E. *Historical, Political and Economic Sciences.* 259 pp. May, 1923. 21/-.
F. *Education and Child Welfare.* 58 pp. June, 1923. 4/-.
G. *Fine Arts and Archaeology.* 106 pp. July, 1923. 9/-.
H. *Music.* 30 pp. July, 1923. 2/6.
I. *Language and Literature.* Part 1—Classical, Oriental and Primitive. 27 pp. September, 1923. 2/6.
Part 2—Modern European. 102 pp. September, 1923. 5/-.
K. *Science and Technology.* 231 pp. December, 1923. 25/-.
1917-19, K. *Science and Technology.* 555 pp. September, 1922. 35/-.

MANCHESTER PUBLIC LIBRARIES. Note on the Commercial Library—opened 23 October, 1919. 8 pp. 1920.

—— Seventy-second Annual Report to the Council of the City of Manchester on the Working of the Public Libraries, 1923-24. 36 pp.

—— The Technical and Scientific Library. 8 pp.

—— Specimens of Index Cards from Subject and Name Catalogues, showing particularly the methods of referring readers to miscellaneous uncatalogued material (pamphlets, trade catalogues, clippings, etc.), which is available at call.

MATTHEWS, R. B. Alphabetical Index to Classified Files (Private), Library at Greater Felcourt, E. Grinstead.

—— Aviation Pocket Book for 1919-20 : a compendium of modern practice and a collection of useful notes, formulae, rules, tables and data relating to aeronautics. 7th *edition*. 536 pp. 1919.

—— Decimal Bibliographical Classification of the Institute Internationale de Bibliographie, Brussels, partly translated for the formation and use of a Universal Bibliographical Repertory.

—— Decimal Classification and Relative Index : an extension of the Dewey system for the Electrical Industry. 64 pp. General Electric Co., Schenectady, N.Y. 1910.

MEES, C. E. K. Organisation of Industrial Scientific Research. 175 pp. McGraw-Hill Pub. Co., 1920. 12/-.

METROPOLITAN-VICKERS ELECTRICAL CO., LTD. (*Research and Education Department*). Specimen reports compiled and issued by the Department during 1924 :—

1. Business conditions in Europe. I.—Rumania.
2. The efficiency of labour.
3. International rates of wages.
4. The industrial, financial, and electrical development of Spain.

—— Specimen folders containing up-to-date statistical and economic data, compiled from periodical literature :—

1. Holland.
2. Central Europe and Balkan States.
3. Africa, Egypt and Palestine.

—— Set of folders demonstrating methods, etc., current in library of Messrs. Metropolitan-Vickers, Ltd. :—

1. Photographs of laboratories and research building, etc.
2. Library shelf arrangement—location diagrams.
3. Scrutiny of current Journals : forms used for notification of important technical papers to interested individuals.
4. Colour scheme of the slip Subject Catalogue.
5. Method of charging in use for references borrowed from slip catalogue.
6. Charging methods : books, journals, pamphlets, etc.
7. Periodicals : recording and filing.
8. Specimen bibliography and search sheet.
9. Specimen cuttings folder.

MINISTRY OF RECONSTRUCTION. Report of the Machinery of Government Committee. (Cd. 9230.) 80 pp. H.M. Stationery Office. 1918. 6d.

NATIONAL RESEARCH COUNCIL, UNITED STATES. Selected publications showing types of important work carried out by the National Research Council and its Research Information Service.

Flinn, A. D., and Cobb, Miss R. Research Laboratories in industrial establishments of the United States, including Consulting Research Laboratories. (*Bulletin No.* 16.) 135 pp. 1921. National Research Council, B. and 21st Street, Washington, D.C. $2.00.

Fulcher, G. S. Indexing of Scientific Articles. (*Reprint and Circ. Series No.* 34). 16 pp. 1921. 20c.

Little, H. P. List of MS. Bibliographies in Geology and Geography, (*Reprint and Circ. Series No.* 27.) 17 pp. 25c.

Matthews, E. B. Catalogue of Published Bibliographies in Geology, 1896-1920. (*Bulletin No.* 36.) 228 pp. 1923. $2.50.

Schramm, J. R. Abstracting and Indexing of Biological Literature. (*Reprint and Circ. Series No.* 38.) 14 pp. 1922. 25c.

West, C. J., and Hull, C. List of MS. Bibliographies in Astronomy, Mathematics and Physics. (*Reprint and Circ. Series No.* 41.) 14 pp. 1923. 25c.

—— List of MS. Bibliographies in Chemistry and Chemical Technology. (*Reprint and Circ. Series No.* 36.) 17 pp. 25c.

Whittaker, H. F. Research Information Surveys on Corrosion of Metals. Nos. 4-6 : Zinc, Tin, Lead. 120 pp. (multigraphed). 1924. $2.00.

NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH. Source-book of Research Data. 70 pp. Prentice-Hall, N.Y. 1923. $4.00.

PERMANENT CONSULTATIVE COMMITTEE ON OFFICIAL STATISTICS. Guide to Current Official Statistics. First issue (1922). 162 pp. H.M. Stationery Office. 1923. 1/-.

PHILIP, A. J. and others. *Ed.* The Libraries, Museum and Art Galleries Year Book. 1923-4. 225 pp. A. J. Philip, Gravesend. 1923. 20/-.

PUBLIC AFFAIRS INFORMATION SERVICE, N.Y. Bulletin. Vol. 10. September 29, 1923. 16 pp. 11, West 40th Street, New York City.
"A co-operative clearing-house of public affairs information."

SCIENCE SERVICE. Descriptive pamphlet of Science Service. 8 pp. 1921.

—— *Daily Science News Bulletin.* 7 March, 1923.

—— *Science News-Letter*: a weekly summary of current science. Issue dated 26 May, 1923. 10 pp. (Multigraphed.) 1115, Connecticut Ave., Washington, D.C. $5.00. per annum, postpaid.

SOCIETY FOR ELECTRICAL DEVELOPMENT, INC. *Electrical News Service.* Issue dated 25 June, 1923. 4 pp. (Mimeographed.) 522, Fifth Ave., N.Y.

SOHON, J. A. and SCHAAF, W. L. Reference List of Bibliographies: chemistry, chemical technology, and chemical engineering published since 1900. 100 pp. H. W. Wilson Co., N.Y. 1924. $1.50.

SPARKS, M. E. Chemical Literature and Its Use. 80 pp. Urbana, Ill. 1921. $1.00.

SPECIAL LIBRARIES ASSOCIATION. (United States.) Commercial Libraries and the Department of Commerce. Report by the Committee on Co-operation with the Department of Commerce. *Ed.* by Dorsey W. Hyde, Jr. 23 pp. 1922. 30c.

—— Handbook of Commercial Information Services. 97 pp. 1924. $2.00.
—— Preliminary Report on Findings of the Committee on Methods. 31 pp. May, 1923. 00c.

—— Program, 15th Annual Conference, Saratoga Springs, June 30-July 5, 1924. 8 pp.

—— Special Libraries Directory. *Ed.* by Dorsey W. Hyde, Jr. 123 pp. 1921. $1.00.

—— Workshops for Assembling Business Facts. (A study of the functions of a business library.) By Dorsey W. Hyde, Jr. 24 pp. 1921. 20c.

TEXTILE INSTITUTE. *Journal.* July and August, 1924. Showing scope of Abstracts.

THOMPSON J. D. Personnel Research Agencies: a guide to organised research in employment, management, industrial relations, training and working conditions. (*Bull. No.* 299. *U.S. Bur. of Labor Statistics.*) 207 pp. 1921. 20c.

UNIVERSITIES BUREAU OF THE BRITISH EMPIRE. Year-book of the Universities of the Empire. 1924. Edited by W. H. Dawson. 756 pp. G. Bell & Sons, Ltd. 1924. 7/6.

WILLIAMS, R. G. The Librarians' Guide, 1923. 136 pp. Literary Year Book Press, Liverpool. 1923. 7/6.

PERIODICALS ON LIBRARIANSHIP.

Specimen numbers of the following were shown :—

The Librarian.
The Library World.
The Library Association Record.
Public Libraries.
Special Libraries.

EQUIPMENT.

ADDRESSOGRAPH, LTD., Grange Road, Willesden Green, N.W.10. A representative of the firm was in attendance to demonstrate the working of the *Addressograph* embossed metal plate card index addressing system, and other applications of the machine, particularly that outlined in the paper by Mr. H. Rottenburg (page 71).

BOOTS BUSINESS SYSTEMS, Nottingham.

The Costmeter Visible Card Index, manufactured by Messrs. Post-Index Co., Inc., Boston, Mass., a visible overlapping paper sheet index (desk book form), which has the advantages that carbon copies may be made for cross-indexing, and also that the available space is considerable.

CARTER-PARRATT, LTD., 16, Victoria Street, S.W.1.

Bizada Index Frame. A visible, double-sided index, stand type or wall type (size 20 ins. by 6¼ ins.), for which the card strips are prepared in sheets for use in the typewriter.

PARKER, TURNBULL, & Co., 3, Holborn Viaduct, E.C.1.

Kardex visible (overlapping) card index, wall type, for standard cards (size 24 ins. by 6 ins.).

LIBRARY BUREAU, LTD., 125, High Holborn, W.C.1.

A representative was present to demonstrate the uses and applications of the following equipment :—

Steel Vertical Filing Cabinet (4-drawer), showing decimal Subject Classification and a direct Alphabetic Filing. *Armorclad* guides and L. B. *Flexifiles* were fitted to the drawers.

Horizontal building-up card section for 3in. by 5in. title subject cards.

Speedac visible card record.

Steel and cloth-covered filing boxes.

RONEO, LTD., 5-11, Holborn, E.C.1.

RoneoDex visible card index. Made for any standard size card. Exhibited as wall panel size 24ins. by 6½ins., and also in desk book form, size 12ins. by 7ins.

Roneo *Numeralpha* filing system for correspondence.

Steel pamphlet case.